TRANSCRIPT OF PROCEEDINGS

IN THE MATTER OF:)
)
LOWERING MINERS' EXPOSURE TO)
RESPIRABLE COAL MINE DUST,)
INCLUDING CONTINUOUS PERSONAL)
DUST MONITORS; PROPOSED RULE)

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IN THE MINE SAFETY AND HEALTH ADMINISTRATION

IN THE MATTER OF:)
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RESPIRABLE COAL MINE DUST,)
INCLUDING CONTINUOUS PERSONAL)
DUST MONITORS; PROPOSED RULE)

Washington, D.C.

Tuesday,
February 15, 2011

APPEARANCES:

MSHA Panel: GREGORY R. WAGNER, M.D., ROBERT THAXTON, GEORGE NIEWIADOMSKI, JON KOGUT, RON FORD, SUSAN OLINGER, JAVIER ROMANACH

Speakers:

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MARK WATSON, Vice President, Alliance Coal
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P R O C E E D I N G S

(9:05 a.m.)

DR. WAGNER: Good morning. It is my pleasure to introduce Mr. Joseph A. Main, the Assistant Secretary of Labor for Mine Safety and Health who's going to kick off this hearing.

MR. MAIN: Good morning and welcome to the, I guess this is the seventh and last public hearing on MSHA's proposal addressing lowering miners' exposure to respirable coal mine dust, including continuous personal dust monitors. These public hearings have been well attended by representatives of Labor, industry, medical and scientific organizations, and others in the mining community, and I want to personally thank those that have participated in this rule making so far by sharing their views with us.

I want to strongly invite our stakeholders to respond to our many requests for specific input into the rule making so we can proceed to the next phase in the most responsive and appropriate manner. We are looking forward to comments from the public to help craft this rule. Information, data, and testimony presented today and information presented at the previous hearings including all written comments will help us develop the best possible regulation to protect miners from the hazards that result from exposure to respirable coal mine dust.

For too long miners have contracted, suffered, and died from debilitating coal workers' pneumoconiosis, an irreversible and progressive lung disease, and chronic obstructive pulmonary disease which includes chronic bronchitis and emphysema. These are among several diseases commonly known as black lung, and they are as we all know preventable. There have been various efforts to reduce and eliminate black lung and control respirable coal dust over the years. Some have been more successful than others, but none have accomplished the goal of ending black lung.

The Mine Act states… “the Secretary in promulgating mandatory standards dealing with toxic materials or harmful physical agents shall set standards which most adequately assure on the basis of the best available evidence that no miner will suffer material impairment of health or functional capacity even if such miner has regular exposure to the hazards dealt with by such standard for the period of his working life”.

As you all know the proposed rule fulfills a longstanding commitment that I made on my first day at

MSHA to carry out this Congressional mandate, and one that I have worked on most of my entire life to lower miners' exposure to respirable coal mine dust and end the black lung disease. This is a commitment that I do fully intend to keep. No miner should die, no family should lose a loved one, and no one should suffer a diminished quality of life due to black lung.

The proposed rule is an important part of our comprehensive initiative to End Black Lung, Act Now. Also, protecting working miners' overall safety and health is a priority of the Secretary of Labor Hilda Solis and of the Department of Labor. The proposed rule would lower miners' exposure to respirable coal mine dust by revising the agency's existing standards on miners' exposure to respirable coal mine dust and significantly improve their health.

The major provisions of the proposal would lower the existing exposure limits for respirable coal mine dust, implement full shift sampling to address extended work shifts, refine the term or redefine the term "normal production shift", and provide for the use of a single full-shift sample to determine compliance under the mine operator and MSHA's inspector sampling programs, ending an averaging scheme that have some miners exposed to doses of unhealthy coal mine dust much higher than Congress intended.

The proposed rule would also require use of the continuous personal dust monitor for exposure monitoring and expand requirements for medical surveillance. I cannot emphasize enough that this is a proposed rule. So far throughout the rule making process we've asked for your specific input into various aspects of the proposal. To help us craft the final rule we need your input, including any specific alternatives to the proposed provisions.

Dr. Wagner will be discussing specific areas where we have requested further comment and rationale. For example, MSHA is requesting comments on the proposed phasing in of the use of the CPDMs, personal and area sampling, the proposed respirable dust concentration limits including the proposed limits when quartz is present, the proposed phase-in of the limits and the proposed means of controlling exposures to meet the limits, full shift samples, and weekly exposure limits, and a number of other areas.

MSHA is particularly interested in your comments on these and other aspects of the proposal and whether you have suggested alternatives that would provide necessary health protections for miners.

Please provide a rationale for any suggested alternatives. We believe that this rule making will bring us closer to realizing the commitment to lowering miners' exposure to respirable coal mine dust and end black lung. It will help us achieve both the Secretary's goal as well as the intent of Congress to eliminate the black lung disease.

Again I welcome everyone's participation and input in today's public hearing. I want to thank you for coming and I want to thank you for taking the time to make your presentation today. Your input will help MSHA develop a final regulation that protects miners from black lung and responds to the needs and concerns of the mining public. This rulemaking represents an important milestone in the improvement of health of our nation's miners. I want to thank you and I do look forward to the comments and input that will be provided through the public comment period to help us craft a rule that is aimed at protecting the nation's miners. And with that I will turn it over to Dr. Wagner. Thank you.

DR. WAGNER: Good morning. I want to add my voice of welcome to that that Joe Main just gave. My name is Gregory Wagner, I'm serving as the Deputy Assistant Secretary for Mine Safety and Health and also am trained as a physician. Before we get started with the formal hearing today I wanted to do a quick run-through of some of the context that this rule was framed within to give you some idea about where it started and to summarize as Joe did some of the key provisions.

I think that many of you recognize the picture here of the 1968 fire and explosion at the Farmington Mine that was the stimulus for the 1969 Federal Coal Mine Health and Safety Act. At that time there was national concern about the safety of miners and the need to protect them from fires and explosions, but there was also a lot of activism and concern about the health issues, the health consequences of mining.

There was concern about the lung diseases that miners were getting from their coal mine dust exposure. That 1969 Act included a mandate from Congress that respirable coal mine dust exposures be reduced to a level, and they said, "which will prevent new incidences of respiratory disease and the further development of such disease in any person."

It was a commitment to stop lung diseases from coal mine dust exposure, and as Joe just quoted the 1977 Act, that was put in place after the Scotia

Mine disaster, obligated the Secretary to set standards that assure on the basis of the best available evidence that no miner will suffer material impairment of health or functional capacity even if such miner has regular exposure to the hazards dealt with by such a standard for the period of his working life.

So fast forward from '76, in the mid '90s. The National Institute for Occupational Safety and Health reviewed the scientific literature that was available, generated in the U.S. and throughout the world, summarized the literature, and came up with comprehensive recommendations in a criteria document that was the Criteria for a Recommended Standard for Occupational Exposure to Respirable Coal Mine Dust.

They communicated those recommendations for ending respiratory disease among miners to the Secretary of Labor, and the Secretary of Labor set up an advisory committee that reviewed the NIOSH criteria document, took their own look at the science. It was a committee that involved industry reps, labor reps, and other academicians, and they made their series of recommendations as well. It's the combination of the recommendations from NIOSH and from the Secretary of Labor's committee, advisory committee on the elimination of pneumoconiosis among coal miners that again are foundational to this work.

Briefly, if you look at the pictures you see on the left a slice of normal lung, in the middle chronic coal worker's pneumoconiosis, you can see the deposition of coal mine dust in the form of these black spots, the beginning of some loss of lung tissue and destruction there, and over on the right a lung that had progressive massive fibrosis with massive deposition, the fibrosis lung forming on itself and destruction of the lung tissue that makes it impossible for the normal air exchange that takes place in the lung.

The diseases that are caused by inhalation of respirable coal mine dust include those, the coal worker's pneumoconiosis, but they also include silicosis if the mine atmosphere contains respirable crystalline silica. Air flow diseases that may or may not show up on X-rays are also caused by exposure to respirable coal mine dust. These include chronic bronchitis and emphysema, some call them mineral airways, mineral dust airways disease. And finally, for those miners who have been exposed to significant levels of silica, they’re at increased risk of tuberculosis as well.

So what's happened over time? Looking, for example, at miners in the top black line who have worked 25 years or more, starting in 1970 when the first Coal Mine Health and Safety Act was passed that imposed a new dust standard, the prevalence of coal worker's pneumoconiosis identified by those who got X-rays in the NIOSH X-ray surveillance program went progressively downward with an inflection point around the year 2000, and then began to creep up again among those who participated.

The miners here had only experienced their dust exposures under the current dust conditions in the mines. NIOSH did a series of studies that identified what they called hotspots and geographic clustering in some areas and tried to look for reasons that these new instances of disease were found. Let me give you a couple of examples that they identified.

You can see here for example a miner 37 years old with advanced chronic pneumoconiosis, on the left three years later, same miner, 40 years old, 19 years of underground experience, has the most severe form, progressive massive fibrosis, this is Stage B, the middle of the three stages. So he at the age of 40 has complicated pneumoconiosis. Another miner, in 2002, had with, he's 42 years old, 22 years of underground experience, worked as a roof bolter shuttle car operator, he has Category 3/3 Stage C pneumoconiosis, having worked only under the current exposure conditions.

While deaths of people with pneumoconiosis have gone down over time, there are still hundreds of people each year dying and likely over 10,000 people dying with respiratory disease caused or exacerbated by their coal mine dust exposure during the last decade. This isn't only an issue of deaths for miners. It's extended suffering for years before they die, it's reflected in problems in families, problems with their expenses, but it's also a financial problem.

You can see this information from the Federal Black Lung Benefits Program shows over $44 billion of expenditures through 2009 from the program that provides benefits only to miners who are totally disabled from all coal mine work as a result of their coal mine dust exposures and the lung disease that results. So we've got some scientific evidence that favor intervention including what appears to be rising prevalence of pneumoconiosis among miners with more than 20 years of tenure who participated in the NIOSH monitoring program and cases of severe disease being seen in young workers, some as young as 40 years or even younger.

The prevalence of pneumoconiosis is greater than was originally anticipated when the original dust standards were set in 1969, and we're finding that far many more miners are dying with CWP than are dying from mining injuries due to accidents. The literature also supports concern that miners are at greatly increased risk for other chronic lung diseases such as emphysema and bronchitis. Bottom line is that black lung is caused by excessive exposure to coal mine dust.

Coal mine dust causes black lung and our goal is to reduce miners' exposure to respirable coal mine dust in order to prevent black lung. There have been a number of explorations of why we might be seeing the disease that we are, and stimulus for the agency to try to do something about it. Joe ran down a number of these provisions and I'm going to mention them as well.

One concern is that miners often work longer than 8-hour shifts, but the current sampling program only samples for 8 hours. As one miner told me, you know, my lungs don't turn off after 8 hours but we turn the pump off after 8 hours. The proposed rule would require sampling for the entire shift. Miners are exposed every working shift, but right now only five shifts are sampled and they're averaged during each sampling period. The proposal would measure exposure during each shift for high risk miners.

The proposed rule addresses other problems. Sampling currently may be taken at reduced levels of production, although it's intended to be taken during normal production. The proposal would require sampling at the average of the last 30 production shifts. As we've noted, miners are getting diseased at the current standard, despite what Congress intended. And the proposal would reduce the exposure limits consistent with the recommendations of NIOSH and consistent with the recommendation from the advisory committee that MSHA consider reducing the exposure limit.

Miners are not provided sufficient information about their health and exposures currently, and the proposal would use the continuous personal dust monitor and additional medical monitoring that would provide miners information on which to act. So that's the quick summary and I'm now going to move into the conduct of the hearing.

I'm going to be monitoring this public

hearing on MSHA's proposed rule to lower miners' exposure to respirable coal mine dust including the use of the continuous personal dust monitor, and what I'd like to do first is introduce members of the MSHA panel. So to my left is George Niewiadomski, to his right, Bob Thaxton. They're both from the coal mine safety and health component of our program.

Jon Kogut is way down at the end, he's under contract to MSHA and developed the quantitative risk assessment in support of the proposed rule and he'll be sitting on the panel today. Ronald Ford and Susan Olinger are from the Office of Standards. And then Javier Romanach from the Office of the Solicitor Mine Safety and Health Division is to my immediate right.

As Mr. Main stated, the proposed rule for lowering miners' exposure to respirable coal mine dust is an important part of the agency's initiative that's being called End Black Lung, Act Now. The Secretary of Labor considers ending black lung disease as one of the Department's highest regulatory priorities. The proposed rule was published in the Federal Register on October 19th, 2010, and in response to requests from the public on January 14th, 2011, MSHA extended the comment period from February 28th, 2011, to May 2nd, 2011. All comments and supporting documentation must be received or postmarked by May 2nd, 2011.

This is the last of seven public hearings on the proposed rule. The first six public hearings were held December 7th, 2010, then January 11th, 13th, and 25th, 2011, February 8th and 10th, 2011, at the following locations: first at the MSHA Academy, then in Evansville, Indiana, next Birmingham, Alabama, next Salt Lake City, Utah, last week it was Washington, Pennsylvania and Prestonsburg, Kentucky.

As many of you know, the purpose of these hearings is to allow the agency to receive information from the public that will help us evaluate the proposed requirements and produce a final rule that protects miners from exposure to respirable coal mine dust. MSHA will use the data and the information from these hearings to help us craft a rule that responds to the needs and concerns of the mining public so that its provisions can be implemented in the most effective and appropriate manner.

MSHA solicits comments from the mining community on all aspects of the proposed rule. Commenters are requested to be specific in their comments and to submit detailed rationale and supporting documents for suggested alternatives. At this point I'm going to reiterate some requests for comment and information that were included in the preamble to the proposed rule or that have come up as a result of public comments since.

Number one, the proposed rule presents an integrated comprehensive approach for lowering miners' exposure to respirable coal mine dust. The agency is interested in alternatives to the proposal that would be effective in reducing miners' respirable dust exposure and invites comments on any alternatives.

Two, MSHA solicits comments on the proposed respirable dust concentration standard. Please provide alternatives to the proposed limits to be considered in developing the final rule including specific suggested standards and your rationale.

Three, the proposed rule bases the proposed respirable dust standards on an 8-hour work shift and a 40-hour work week. In the 1995 criteria document on occupational exposure to respirable coal mine dust, the National Institute for Occupational Safety and Health recommended lowering exposure to 1 milligram per meter cubed for each miner for up to a 10-hour work shift during a 40-hour work week. MSHA solicits comments on the NIOSH recommendation.

MSHA included the proposed phase-in periods for the proposed lower respirable dust standards to provide sufficient time for mine operators to implement or upgrade engineering or environmental controls. MSHA solicits comments on alternative time frames and factors that the agency should consider. Please include any information and detailed rationale.

Five, in the proposal MSHA also plans to phase in the use of continuous personal dust monitors to sample production areas of underground mines and part 90 miners. MSHA solicits comments on the proposed phasing in of CPDMs including time periods and any information with respect to their availability. If shorter or longer time frames are recommended please provide your rationale.

Six, MSHA has received a number of comments about the use of the continuous personal dust monitor, or CPDM. For operators who have used this device MSHA is interested in receiving information related to its use. For example, MSHA is interested in information related to the durability of the unit, whether and how often the unit had to be repaired, type of repair, cost of repair, whether the repair was covered under warranty, and how long the unit was unavailable and any additional relevant information.

Seven, MSHA understands that some work

shifts are longer than 12 hours and that the dust sampling device batteries generally keep them working for approximately 12 hours. MSHA solicits comments on appropriate time frames to switch out sampling devices whether gravimetric samplers or CPDMs to assure continual operation, uninterrupted protection for miners for the entire shift.

Eight, the proposed single sample provision is based on improvements in sampling technology, MSHA experience, updated data, and comments and testimony from earlier notices and proposals that addressed the accuracy of single sample measurements. The agency is particularly interested in comments on new information added to the record since October 2003 concerning MSHA's quantitative risk assessment, technological and economic feasibility, compliance costs and benefits.

Nine, MSHA is interested in commenters' views on what actions should be taken by MSHA and the mine operator when a single shift respirable dust sample meets or exceeds the excessive concentration value. In this situation if operators use the CPDM what alternative actions to those contained in the proposed rule would you suggest that MSHA and the operator take? MSHA is particularly interested in alternatives to those in the proposal and how such alternatives would be protective of miners.

Ten, the proposal includes a revised definition of normal production shift so that sampling is taken during shifts that reasonably represent typical production and normal mining conditions on the MMU. Please comment on whether the average of the most recent 30 production shifts as specified in the proposed definition would be representative of dust levels to which miners are typically exposed.

Eleven, the proposed sampling provisions address interim use of supplementary controls when all feasible engineering or environmental controls have been used but the mine operator is unable to maintain compliance with the dust standard. With MSHA approval operators could use supplementary controls such as rotation of miners or alteration of mining or production schedules, in conjunction with CPDMs to monitor miners' exposures. MSHA solicits comments on this proposed approach and any suggested alternatives as well as types of supplementary controls that would be appropriate to use on a short term basis.

Twelve, the proposed rule addresses which occupations must be sampled using CPDMs and which work positions and areas could be sampled using either CPDMs or gravimetric samplers. MSHA solicits comments on the proposed sampling occupations and locations. For example please comment on whether there are other positions or areas where it may be appropriate to require the use of CPDMs. Also comment on whether the proposed CPDM sampling of other designated occupations on the MMU is sufficient to address different mining techniques, potential overexposures, and ineffective use of approved dust controls. Some commenters have recommended only sampling individuals, but the Mine Act requires enforcement of an environmental standard. Should the same dust limits be established and enforced for both individual miners and the mine environment?

Thirteen, the proposed rule addresses the frequency of respirable dust sampling when using a CPDM. MSHA solicits comments on the proposed sampling frequencies and any suggested alternatives. For example if sampling of designated occupations were less frequent than proposed, what alternative sampling frequency would be appropriate? Please address a sampling strategy in case of noncompliance with respirable dust standard and provide your rationale. Also, should CPDM sampling of other designated occupations be more or less frequent than 14 calendar days each quarter? Please be specific in suggesting alternatives and include supporting rationale.

Fourteen, the proposal would require that persons certified in dust sampling or maintenance and calibration retake the applicable MSHA examination every three years to maintain certification. Under the proposal these certified persons would not have to retake the proposed MSHA course of instruction. MSHA solicits comments on this approach to certification. And again please include specific rationale or suggested alternatives.

Fifteen, in the proposal MSHA would require that the CPDM daily sample and error data file information be submitted electronically to the agency each week. MSHA solicits comments on suggested alternative time frames particularly in light of the CPDM's limited memory capacity of about 20 shifts.

Sixteen, the proposal contains requirements for posting information on sampling results and miners' exposure on the mine bulletin board. MSHA solicits comments on the lengths of time proposed for posting data. If a standard format for reporting and posting data were developed what should it include?

Seventeen, the periodic medical surveillance provisions in the proposed rule would require operators to provide an initial examination to each miner who begins work at a coal mine for the first time and then at least one follow up examination after the initial examination. MSHA solicits comments on the proposed time periods specified for these examinations.

Eighteen, the proposed respirator training requirements for performance based and the time required for respirator training would be in addition to that required under Part 48. Under the proposal mine operators could however integrate respirator training into their Part 48 training schedules. The proposal would require that operators keep records of training for two years. Please comment on the agency's proposed approach.

Nineteen, the proposed rule specifies procedures and information to be included in CPDM plans to ensure miners are not exposed to respirable dust concentrations that exceed the proposed standard. For example the proposed plan would include a preoperational examination, testing, and setup procedures to verify the operational readiness of the CPDM before each shift. It would also include procedures for scheduled maintenance, downloading and transmission of sampling information, and posting of reported results. Please comment on the proposed plan provisions and include supporting rationale with your recommendations.

Twenty, MSHA has received comments that some aspects of the proposed rule may not be feasible for particular mining applications. MSHA is interested in receiving comments on the specific mining methods that may be impacted and alternative technologies and controls that would protect miners.

Twenty one, MSHA has received comments on proposed Section 75.332(a)(1) concerning the use of fishtail ventilation to provide intake air to multiple MMUs. Commenters were concerned that under the proposed rule the practice of using fishtail ventilation with temporary ventilation controls would not be allowed. MSHA solicits comments on any specific impact of the proposed rule on current mining operations, any suggested alternatives, and how the alternatives would be protective of miners.

Twenty two, the agency has prepared a preliminary regulatory economic analysis which contains supporting cost and benefit data for the proposed rule. MSHA has included a discussion of the costs and benefits in the preamble. MSHA requests comments on all aspects of costs and benefits presented in the preamble and the preliminary regulatory economic analysis, including compliance costs, net benefits, and approaches used and assumptions made in the preliminary economic analysis.

Twenty three, Commenters have discussed epidemiologic studies and data on coal mine dust exposure presented in the preamble to the proposed rule. MSHA solicits comments regarding studies and data and request that you be as specific as possible. Please identify the studies and data on which you are commenting, provide detailed rationale for your comments, and include any relevant information and data that will help us evaluate your comments.

Twenty four, MSHA has received comments that the proposed rule should not require mine operators to record corrective actions or excessive dust concentrations as Section 75.363 hazardous conditions. MSHA would like to clarify that the proposal would require that operators record both excessive dust concentrations and corrective actions; however, under the proposal MSHA intends that these actions be recorded in a similar manner as conditions are recorded under Section 75.363. However MSHA would not consider them to be hazardous conditions.

Twenty five, a commenter at the first public hearing suggested that the time frame for miners' review of the CPDM performance plan be expanded. I want to clarify MSHA's position in the proposed rule. In developing the proposed rule, MSHA relied on the time frame and process in the existing requirements for mine ventilation plans. In the proposal, MSHA did not intend to change the existing time frames and processes and stated that the proposed rule is consistent with ventilation plan requirements and would allow miners' representatives the opportunity to participate meaningfully in the process.

As you address the proposed provisions either in your testimony today or in your written comments, please be as specific as possible. We cannot sufficiently evaluate general comments. Please include specific suggested alternatives, your specific rationale, the health benefits to miners, and any technological or economic feasibility consideration, and data to support your comments. The more specific your information is, the better it will be for us to evaluate and produce a final rule that will be responsive to the needs of the mining public.

As many of you know, this public hearing will be conducted in an informal manner. Cross-examination and formal rules of evidence will not apply. The panel may ask questions of speakers or may not. Those of you who notified MSHA in advance of your intent to speak or have signed up today to speak will make your presentations first, and then after all the speakers have finished, any others who wish to speak may do so.

If you wish to present written statements or information today please clearly identify your material and give a copy to the court reporter who is sitting over there. You may also submit comments following the public hearing. Comments must be received or postmarked by May 2nd, 2011. Comments may be submitted by any method identified in the proposed rule. MSHA will make available transcripts of all the public hearings approximately two weeks after the completion of the hearing. You may view the transcripts of the public hearings and comments on MSHA's website at www.msha.gov.

We've got a sign-in sheet at the back of the room. We'd ask all of you who are in attendance today to please sign in. And now I'm going to begin today's hearing, and please begin after I call you up by clearly stating your name and organization, spell your name for the court reporter so that we have an accurate record. There is a group that asked to speak first, and this group includes Bruce Watzman, Mark

Watson, Heath Lovell, Joe -- wait, I'm sorry, are those, those are the three? Joe Lamonica is on the -- then you're going to have to bring the rest of the panel up and introduce yourselves because it's not on my list. Thank you, Bruce, and I think you get this now.

MR. WATZMAN: I thank you, Mr. Chairman, and I want to introduce all the panel members if that's okay with you at the end of my opening statement. I'm Bruce Watzman and Senior Vice President for the National Mining Association and we appreciate the opportunity to testify and for your accommodating our request for a panel presentation.

DR. WAGNER: May I ask could you spell your name for the court reporter please?

MR. WATZMAN: W-A-T-Z-M-A-N. With your indulgence we'd ask that questions be withheld until all of the presentations have been made. The entire panel will remain and be available to respond to any questions that any of you have. Before I begin I would make a request. You during your opening comments identified somewhere in the range of 25 specific issues that you're soliciting comments on. Some of those were introduced during previous hearings as you indicated. They were not, they were on the basis of testimony that was presented, they're not part of what was contained in the original proposed rule and the request for information in the proposed rule. I would ask that the requests that you identified be published in the Federal Register so that everybody can be aware of it, both those who are in attendance here as well as those in the industry and other stakeholders who aren't able to be here today. I think that's only fair if you want to get a full and complete record and responses to all of those.

As you're aware, the National Mining Association has a long history in support of efforts to eliminate coal worker's pneumoconiosis. We have and continue to work with you and others to examine new technologies and techniques to reduce miners' exposure to respirable dust. Early in his term, Assistant Secretary Main announced a new initiative to End Black Lung Now. NMA's president and CEO in response to a direct request from the agency wrote and pledged the Association's commitment to this goal and to offer NMA member companies' perspectives on several critical elements the industry believes must be considered if we're to achieve this goal.

Unfortunately, the industry's suggestions are not reflected in the proposed rule. In fact some of the suggestions are specifically precluded. It's unfortunate and disheartening that the industry's suggestions contained in a letter of support requested by the agency were discounted without the opportunity for discussion. We'd ask that a copy of the NMA letter of November 25th, 2009, be made a part of the record of this hearing.

On January 18 of this year the President issued an executive order improving regulations and regulatory review. In it he calls for regulatory agencies to follow a basic principle in the development of regulations, namely, before issuing a proposed rule making each agency where feasible and appropriate shall seek the views of those who are likely to be affected, including those who are likely to benefit and those who are potentially subject to the rule makings. And I stress the phrase that leads this, that is the introduction to this, before issuing a proposed rule.

We anxiously await the opportunity to sit down with you as directed in the executive order. The executive order also speaks to the need for agencies to assess the cumulative impact of multiple regulations, something MSHA has yet to do. As we're all aware, the underground coal industry has had to adapt to multiple new regulations and legislative requirements since 2006. Several more proposed regulations are staring the industry in the face. The cumulative impact of the new requirements must be assessed and we look forward to having the opportunity to review and comment on the cumulative assessment once it's finalized.

On November 25th, 2010 -- or excuse me, October 25th, 2010, and November 11th, 2010, NMA sent Freedom of Information Act requests to MSHA and the National Institute for Occupational Safety and Health respectively to obtain information critical to our review of the proposed rule. On November 4 we received a response from DOL's FOIA officer indicating that we would receive a response to our request "within 45 days of the date of this letter".

To date we've heard nothing more from either DOL or NIOSH. The time for writing regulations behind closed doors and denying access to information has long since passed. We hope that the information requested will be provided in a timely manner to permit our review before the close of the comment period. Barring this, we'll be filing a request with you for an additional extension of the comment period.

And I find it interesting in your opening presentation you showed the results of X-rays of two miners with their work histories. This is the very information that we have requested and we've been denied access to under HIPAA privacy concerns. If it's okay to use it in a hearing to introduce the subject, why is it not okay to share this information in its entirety with the industry?

As we began our review of the pending proposal we employed two tests. First, will proposed revisions improve miners' health? And second, will the proposed revisions restore confidence in the dust sampling program? Regrettably, we've concluded that the proposal fails both of these fundamental tests.

As you're aware and as the industry testified in earlier hearings on the proposed changes to the program, we've long sought simplicity, transparency, and performance rather than prescriptive regulations. This proposal meets none of these goals. The proposal is confusing, a view shared by miners and mine operators alike, open to the potential for numerous ever-changing regulations, and in some regards disingenuous.

The decision to expand the medical surveillance program to include spirometry testing, while worthwhile, is one such example and is of little value given the agency's decision to exclude the current workforce from inclusion in a mandatory surveillance program. Early identification is our best secondary prevention tool to prevent disease, it's the foundation upon which the Part 90 program is predicated.

Excluding current workers from mandatory participation in the program eliminates the opportunity for them and their medical providers to work with operators to implement intervention measures. In our view, excluding current workers violates Section 101(a)(6)(A) of the Mine Act which requires MSHA to set standards which most adequately assure that no miner will suffer material impairment of health or functional capacity.

We'll never succeed in achieving our mutual goal of preventing occupational lung disease and restoring confidence in the program if we cannot agree on this basic issue. It's time for all of us to work together to develop a program that protects miners' rights and ensures participation in the program by all employees, new hires and the current workforce alike.

We also register our strong objection to the economic analysis and cost certifications set forth by

MSHA in the proposed rule and the agency's lack of consideration of alternatives. As others will discuss, a realistic analysis of the actual MSHA sampling database and of the ramifications of the changes to Part 75 demonstrates that the economic impacts of the proposed rule will be far greater than the agency's analysis contemplates.

Moreover, we find it disappointing and counterproductive that the proposed rule does not recognize the safe, effective, and efficient use of controls such as supplied air helmets or other respiratory protection devices as compliance tools. As currently engineered these won't work in all applications, but where they do it's far more effective than further experimenting with other engineering controls and proven effective in controlling exposures to dust.

We're at a critical time in the continuum of respirable coal dust sampling. Our efforts have gotten us to the point where miners can know on a real time basis how their actions are impacting dust exposures. No longer will we have to wait days to receive the results of dust sampling to understand exposures on a particular shift or guess at the actions that cause those exposures. Rather, miners will be empowered with the knowledge required to lower exposures, but unfortunately the proposed rule undermines the power and utility of this new technology.

It's the continuous personal dust monitor, not the continuous designated occupation monitor or the continuous designated area monitor. Think about it, think about how this rule is construed. We will soon be at the point where mining technology advances allow employees to operate a long wall remotely. But under the rule the operator would still have to locate a CPDM in the face where no miner is located. Absurd, don't you think?

However, while the CPDM will provide information that will help take real time intervention action, it also changes the measurement system for coal dust, produces new and different results, and creates a new database that is not necessarily comparable to the current database or our current understanding of exposure levels. We join with the UMWA in urging just as Dennis O'Dell did when he appeared at the first public hearing in Beckley to use the CPDM to "gather true sample readings of what miners are being exposed to today with the current extended work shifts and the various coal seams before we actually determine what is protective and what can realistically be achieved."

Dennis is correct when he states "it's important that before the proposed rule is placed in the industry that we have real time data that can be provided to understand what can actually be achieved." The new CPDM sampler is a massive change in technology from the existing system, providing the desired instant results but using a new cyclone to select and determine if the collected dust is respirable, a new vibration methodology of determining the dust sample weight that does not use a calibration standard for each weight determination.

The new system eliminates the protections used currently by the MSHA dust lab to prevent contaminated samples from being reported as high but false results and suspect low weight gain samples from providing false assurances of compliance. The new system uses a new small filter to collect the dust for measurement without the blank cassette analysis in use in today's system to protect against the known deficiencies in the filter system that cause false weight gains.

In other words, while the new CPDM provides greatly desired real time measurements, we need to better understand what those measurements mean from an accuracy, precision, and feasibility perspective before new regulations mandate its use for compliance purposes. Without fully understanding the CPDM and the impacts of its use and results, adopting a new and reduced dust exposure limit, a new single shift compliance determination procedure, and a new series of operating mandates creates dangerous risks and unanticipated and unnecessary disruptions in an industry that cannot afford it, particularly at a time when coal jobs are threatened throughout coal producing regions by environmental concerns and other regulations.

We urge MSHA and NIOSH to join with the interested parties in a data gathering study using both the CPDM and the current dust sampling and analysis system to determine exposures, compare results, and examine the accuracy of measurements and current exposure levels before determining the feasibility and need for new regulations. The 1977 Federal Mine Safety and Health Act requires that both MSHA and NIOSH undertake Section 101 rule making to determine that a single shift sampling procedure and compliance determinations contained in the proposed rule produce accurate results, are consistent with the latest scientific evidence, and are feasible both economically and technically.

We're disappointed that MSHA and NIOSH have not jointly undertaken the studies and rule makings needed to comply with these statutory mandates, and we urge the agencies to do so with our participation before further considering or adopting the proposed regulations. Before we begin our detailed testimony on the proposed rule, I'd like to correct the record of prior statements by agency representatives indicating that the proposed rule will not adversely impact jobs and the industry because most of the industry is already in compliance with the proposal. Nothing could be further from the truth.

My colleagues will be presenting detailed data and information that proves the devastating impact of the MSHA proposal. Initially, however, I point out that MSHA's analysis of the proposal is based on averaging of multiple samples to make it appear the industry is already in compliance. Yet when the actual MSHA database of over 1 million samples is examined in light of the proposed rule, the stark reality is that this rule will result in the issuance of tens of thousands of violations and penalties and required plan changes each and every year.

MSHA cannot continue the averaging game using historical data to predict false impacts when it proposes that compliance under the new rules be based on single shift samples taken every day for each designated work position instead of the average of five samples spread out over time as has been required for decades to achieve accurate sampling results.

MSHA cannot continue to use the averaging game using historical data to predict false impacts of its proposed rule when it proposes that compliance under the new rules will be based on a dust limit that ranges from 70 to 50 percent lower than the limit which has been in place for decades. Today, a significant percentage of underground coal mines are operating on a reduced standard due to silica.

Silica exposure is a serious problem and one that we need to address. But I challenge all of you to explain how mines on the basis of a single shift compliance determination are going to meet a .2 or .5 standard every day every shift. Our analysis of the dust database continues, but we've at least preliminarily concluded that a significant percentage of mines will be required to meet a standard that is not achievable using today's suite of engineering controls.

This raises very significant concerns regarding the technologic feasibility of the proposed rule and whether this will result in job losses. The testimony of our panel members will also demonstrate that the coal industry has had and continues to have a successful track record of reducing coal dust exposures and preventing coal worker's disease. We've achieved a 37 percent reduction in average dust concentrations in the last two decades and a 19 percent reduction since 2006.

We understand and share the concern expressed by MSHA and NIOSH for the unexpected and recent identified cases of disease development in certain discreet areas of the coal community. We're committed to preventing all occupational disease, but we do not believe that the proposed rule is warranted or will make an impact in addressing these recent findings.

And NMA members, the members of NMA's panel have spent considerable time and effort reviewing the proposed rule and the supplementary information accompanying the rule. Their detailed comments will be a part of the industry's written comments which will be filed at the close of the comment period.

Today they will share with you their summary review of the proposal.

The first presenters will be Mark Watson, Vice President of Alliance Coal, and Heath Lovell, General Manager of Riverview Coal, an Alliance Coal subsidiary. They'll present an analysis of the agency's dust sample database with particular attention on the use of single shift samples for compliance determination and a detailed analysis of the CPDM.

Next, Craig Yanak, Principal with Safety, LLC, will provide his review of the performance of the CPDM based on his long experience working with the device. Following, Gary Hartsog, President and CEO of Alpha Engineering Services, will present his review of the proposed rule revisions to 30 CFR Part 75 regarding ventilation.

Next will be Dr. Anthony Cox. Dr. Cox is President of Cox and Associates, a research company specializing in quantitative health risk assessment and causal modeling among other specialties. Dr. Cox will present his review of the QRA that accompanies the proposed rule. Finally, Bob Glenn and Dr. John Gamble will present their review of the literature the agency examined as the basis for the proposed rule with specific attention to the studies examining the phenomena that has become known as rapid progression of coal worker's pneumoconiosis and whether exposure response studies support a lowering of the coal dust standard.

Bios for each of the presenters will be provided for the hearing record. Mr. Chairman, as I began I pointed to the fact that it's time for the agency to sit down with miners and mine operators. This is long overdue. We call upon you to withdraw this proposal, subject the science upon which it's predicated to open and transparent peer review, and work with all stakeholders to identify the extent of the problem and develop solutions tailored to identified needs rather than bootstrapping a new requirement on the entirety of the industry without demonstrated justification. Thank you. With that I'll turn it over to the first two witnesses.

MR. WATSON: I'm Mark Watson, M-A-R-K W-A-T-S-O-N. This is a joint presentation. Heath Lovell will be presenting near the end of the presentation, and I wanted to just go ahead and introduce him. I'm Vice President for Alliance Coal and Heath is General Manager for Riverview Coal which is one of our operations in west Kentucky in MSHA District 10.

I'd like to start by showing that the average dust concentration for the entire industry over the last two decades has reduced by 37 percent. Bruce mentioned that in his opening statement. This analysis includes both surface and underground mines and all occupation codes. We are proud of these results, particularly the 19 percent reduction that has occurred since 2006. Average exposures are important in understanding health risks for diseases based on long term exposure, but not for understanding daily compliance impacts.

The data used in this presentation comes from MSHA's coal dust sampling database, and we thank MSHA for providing the sampling database for this analysis. We looked at over 1.3 million dust samples dating back to 1986. A lot of the presentation focuses on the 2010 samples, we have the entire year, and that was 71,959 samples from year 2010.

MSHA has provided a summary table of its coal dust sampling database as part of the rule making record showing the average concentration level since 2006. In order to determine the accuracy of the single shift sample compliance determination proposal and the feasibility of the new rules, MSHA must analyze single shift results, not averages which remove inaccuracies and reduce the variability of single shift results.

The table on this slide shows the same information as presented by MSHA, though we have included the standard deviation in addition to the average concentration. It's important to recognize that the standard deviation exceeds the average, demonstrating a wide range of results. Large variability must be understood and accounted for before declaring single shift samples accurate at the level of the new proposed limits. 50 percent reductions dependent on shift length, silica content, production level mandates can all impact the actual limit.

In addition to understanding the variances of, a variance of samples, it's also important to look in individual occupations. This graph shows the average concentration for continuous miner operators over the last two decades. As you'll see it's a similar reduction to what we saw for the entire industry, 37 -- excuse me, I just want to point out that the CM operators, continuous miner operators, accounted for 37 percent of the entire sample database. 91 percent of the designated occupation samples from 2010 were continuous miner operators.

And we demonstrated a 46 percent reduction in average exposure over the last two decades and a 17 percent reduction since 2006. We're particularly proud of this result as well.

I know there's a lot of information on this page but over the next nine slides we'll take a more detailed look at the database over the last ten years with emphasis on 2010. First we'll take a look at all samples which includes all occupation codes, both surface and underground. So this slide shows the distribution of those samples. It's important to recognize that 1,876 8-hour single shift samples exceeded 2 milligrams per cubic meter in 2010. 10,506 of those samples exceeded 1 milligram per cubic meter in 2010.

MSHA and NIOSH must analyze single shift accuracy for the CNVP issue and the CPDM sampler for the proposed 1-milligram limit, extended shift reduced limits, .8 milligrams for 10-hour shifts, .67 for 12-hour shifts, and silica content reduced limits. Same information, just more summary info. 2.6 percent of 8-hour single shift samples exceeded 2 milligrams, 15 percent exceeded 1 milligram, 22 percent exceeded .8, and 40 percent exceeded 0.5 milligrams.

This slide presents the same data but

excludes low weight gain samples which are samples below 0.1 milligram. It's important to recognize that those samples may be avoided by MSHA according to PIB P10-06. So percentages change. 3 percent of samples exceed 2 milligrams, 17 percent exceed 1, 25 percent exceed .8, and 46 percent exceed 0.5. The next three slides will focus on designated occupation samples. So we looked at occupation code type 1 for this analysis.

1,349 8-hour samples exceeded 2 milligrams in 2010. 6,641 samples exceeded 1 milligram. 9,587 samples exceeded .8 milligrams. Similar summary data as we just looked at. 4.6 percent of the samples exceeded 2 milligrams, 23 percent exceeded 1, 33 percent exceeded .8, and 55 percent of designated occupation samples exceeded .5 milligrams per cubic meter in 2010.

Excluding the low weight gain samples we found that 4.8 percent exceeded 2 milligrams, 24 percent exceeded 1, 35 percent exceeded .8 milligrams, and 58 percent exceeded 0.5 milligrams per cubic meter. On the next three slides we'll look at designated occupation and other designated occupation samples. The occupation codes used for this analysis are listed here on the page. We found that 1,510 samples exceeded 2 milligrams, 8,235 exceeded 1, 12,186 exceeded .8 in 2010.

Summarizing, 3.7 percent of the sample exceeded 2, 20 percent exceeded 1, 30 percent exceeded .8, and 53 percent of DO and ODO samples exceeded .5. So as we did before, we looked at again excluding the low weight gain samples, we found that 3.9 percent exceeded 2, 21 percent exceeded 1, 31 percent exceeded .8, and 55 percent of the samples in 2010 exceeded .5. So what does all this mean? The next two slides, we used the 2010 results which we just summarized to estimate the number of violations that would have occurred if the proposed rule would have been implemented in 2010, so we're assuming 2010 results but applying the provisions of this proposed rule to it.

Found the number of DO and Part 90 samples to be 568,400. That's taken from the MSHA PREA, and you know, we did calculations as well, we believe that number to be accurate. Calculated 42,250 of those samples were Part 90. That was based on 169 Part 90 miners, 250 shifts per year. So we're left with a requirement under this proposed rule for 526,150 DO samples per year. Looking back to 2010 actual results, excluding the low weight gain samples there were 27,865 valid samples taken.

I've used a 10-hour shift as the average shift length for the industry. The 10-hour shift will ultimately reduce the standard, 1-milligram standard as proposed to 0.8. We found that 34.4 percent of designated occupation samples in 2010 exceeded that level. If you apply that 34.4 percent to the number of samples that will be required for DOs under this proposed rule it equates to 181,023 violations assessed for designated occupations.

This is the same type of analysis for other designated occupations. Came up with 215,432 other designated occupation samples that would be required under this rule. Again I got this data from the PREA, it seems accurate to me based on other methods of calculating it. 2010, there were 11,038 ODO type samples, so we're going from 11,038 to 215,433. The number of samples that exceed 0.8 milligrams, our percentage of samples that exceed 0.8 is 23.5 or was 23.5 in 2010. That equates to 50,725 violations assessed for ODOs under this proposed rule.

Okay, so our database showed that in 2010 there were 40,520 8-hour single shift samples for DO or ODO occupations. As mentioned earlier, 1,510 of those samples exceeded the 2-milligram standard.

There were 133 total dust violations assessed by MSHA in 2010. Looking at the provisions of this proposed rule, at least 27,500 total violations would be assessed annually for DO and ODO samples alone based on proposed single shift sampling frequency without adjusting for shift lengths or reducing compliance limits.

So basically comparing to the 2-milligram standard, taken in consideration the number of samples that are required to be taken each year if we adjust this standard for shift lengths using a 10-hour shift that would be a reduction to a 1.6-milligram standard, that would create at least 51,000 total violations. If we take it to the next level at a 1-milligram compliance level and reduce that according to shift length we came up with over 220,000 violations that would be assessed annually under this proposed rule for DO and ODO samples alone using the CPDM single shift sample and reduced limit proposal.

I also want to point out that no consideration's been given to reductions due to silica content. So I think that a good percentage of the 133 violations that occurred in 2010 were violations that occurred at reduced standards. So when I'm saying at least this number of samples will occur we believe that it will be significantly higher than that because the reduced standards due to silica will require the 2-milligram, 1.6, 0.8 levels that we've analyzed to be significantly less for specific mines.

Each of these violations requires a plan change, a penalty, and will likely entail non-operating economic production losses. And no new technology has been identified to prevent or abate these new violations created by the proposed rule. Proposed dust rule that would produce from 27,500 to 220,000 violations at U.S. mines, at least that amount, instead of the 133 issued in 2010 cannot be feasible.

Each violation would require abatement, a penalty, mine plan amendments, and will likely result in mine interruptions until plan approvals can be obtained and abatement accomplished. By averaging results from the current dust sampling system and not using the latest 2010 database of single shift sample results to determine compliance impacts under the proposed system, MSHA improperly masks the feasibility of this rule.

The MSHA proposal mandates changes in the dust sampling system that increase inaccurate results noncompliance determinations is shown by the data we will present next from our own side by side sampling program. I've listed several of these changes on this slide. As mentioned we'll go through an analysis of our data in the next group of slides that Heath will present.

MSHA's proposed single shift sample accuracy finding does not properly account for these changes and other changes in the proposed sampling system and their adverse impact on sample accuracy. NIOSH has not joined MSHA in this rule making to make the statutory mandate that both agencies find and declare the proposed single shift compliance samples accurate.

MR. LOVELL: Thank you, Mark. My name's Heath, H-E-A-T-H, Lovell, L-O-V-E-L-L. I think we're all familiar but just to put two definitions on the screen for the CMDPSU, CPDM I think everybody knows what we're talking about but just to be clear. Starting back in October of 2009 Alliance began what we believe is the most extensive program to analyze the PDM. That program ran from October 2009 through January. Although the program continues today, the data we have included is through January.

We currently have 40 PDMs in operation. We believe that's about a third of every PDM out there that has been purchased by the operators. We are currently doing this throughout six mines in two different seams, both in District 8 and in District 10, and we have a very large population size. Currently we have over 1,000 PDM samples. Of those 955 have samples with both PDM and the CMDPSU data from the MSHA lab.

For the training to take on this program we have both on-site training conducted by Thermo Scientific in the beginning for all the safety departments, and then we continue to have predust sampling meetings with all equipment operators before every bimonthly cycle, and then there is also underground support as needed during the operation.

Just a quick note on what we found on the PDMs themselves. Basically of the 40 CPDMs 14, or 35 percent, have been sent back to the manufacturer in the last 10 months. As noted in the first bullet, that does not include any in-house repair. Basically the only time the device goes to the manufacturer is when we cannot repair the device on-site. Five of the 40, or over 10 percent, have been sent back multiple times.

Also point out that the instantaneous errors that show up on the dust data card, over 20 percent have at least one instantaneous error, 63 show multiple errors. And I'll also point out that none of the data includes any diagnostic failures. We excluded all of those because it does produce or produces no hard copy or electronic copy, it stops sampling when the failure occurs, and also intentional manipulation by the user could create these. So all those failures have been excluded and not in our current database.

I want to go through a quick slide that talks about two things. The difference and then percent difference. Basically this is six data points from our database, and I want to make out two points. One is if you look at the difference by just taking the gravimetric by the PDM and average those, that gives you an artificially low number because basically every time the CMDPSU is higher than the PDM you get a positive, when it's reversed you get a negative, and often when you average those together they cancel each other out.

We were not concerned about which one was higher, the PDM or the CMDPSU. What we were concerned about was the magnitude of their difference. So basically what we did is with all of the differences we just took the absolute value of and then we took an average. Then we also converted that to percent, just comparing that number with the gravimetric weight. So throughout these slides we'll talk about difference in concentration and then also with percent of the gravimetric value.

Overall results. Of the 955 samples the average concentrations are extremely close. The averages are only one hundredth of the difference of each other. The surprising thing is when you look at that average of the difference it is .26 milligrams per cubic meter, or basically 31 percent of the average. So basically they are .26 apart most of the time. You also see the range listed.

You also see on the sample with errors, those instantaneous errors which happen 20 percent of the time, then the difference is 36 percent of what's on the L sampler. We also did a couple other analyses which look at the low end and the high end. Basically when the PDM reads .4 you'll see that difference go up to 43.4 percent of the gravimetric reading, and the highest 5 percent you'll see the biggest difference, and that is where we saw a difference of 82 percent. The average difference was .98 compared to an average of 1.1. And even in the middle, even at the .8 to 1.2 you'll still see that even though the averages are within three hundredths they differ by .2, or 21.3

percent.

At the top I've listed the NIOSH accuracy definition, accurate within 25 percent of actual concentration 95 percent of the time. One thing that we were very surprised to find is that of our almost 1,000 samples 42 percent of the time, or 401 samples, the two devices were over 25 percent apart. So over 40 percent of the time they're further than 25 percent apart. Both the CMDPSU and the CPDM failed the NIOSH accuracy definition and they failed the common definition of accuracy and cannot meet the Mine Act's required finding of accurate single shift sample results.

Just to further go into the distribution, this is magnitudes so where you have difference in concentration. Of the 1,000 or 955 samples, 32 percent of the time or 306 samples, the two devices were over .25 milligrams per cubic meter difference. And again you can see the distribution in the six different ranges. Only 20 percent of the time were the two devices within .05. If you convert that to percent you'll see how that is divided up. Again, 400 of the 955 samples the two devices were over 25 percent apart.

We also broke the data down into results by mine. The first column's just the mine, the second column is just the PDM divided by the CMDPSU and then the two different averages. What is very surprising is that we feel both devices are dependent on a lot of factors, particle size, seam, quality of the coal, humidity, et cetera, and we see that especially with mine 5 and mine 6.

The interesting thing about mine 5 and mine 6 is that those mines have the same PDMs, the same safety department, the same trainers, the only difference is which mine the two devices are being used that day, and there is a very sharp difference between the two seams at both mines even though you're using the same devices, the same trainers, and the same safety department.

Here is just a look at the differences in concentration between the gravimetric and the PDM by serial number, back to looking at it over time and manufacture. Again you'll see it's the new ones don't perform any better than the old ones. You also see it by mine. Again it's somewhat random in that there's not one mine that has a worse problem than the other mines, they all are very consistent in their differences. And then the same two slides using percent difference. And then again by mine.

Again point out that of the 955 samples 41 percent the PDM was greater, 58 percent the gravimetric was greater. But I think the most telling statistic is the very bottom, that 32 percent of the time the devices are over .25 milligrams per cubic meter, that represents over 25 percent of the proposed standard of 1.

To look at our database when compared with the proposed new standard, again we look at .8 because we use 10-hour portal to portal at all six mines, and even though both devices are very very close to that .8, .83 and .82, you'll see that both devices had over 40 percent of the samples over .8 milligrams per cubic meter. So even though the averages are very very close to .8, the percent that is over .8 is almost half the time.

Here's one of our other I guess interesting conclusions. This is basically a graph or a scatterplot of the gravimetric or CMDPSU on the bottom, the X axis, the PDM weight is on the Y axis, and you can see the linear regression line. But then when you look at all samples even though by average the two devices are very very close, back to .83 and .82 average, so on average the devices are very very close, but on any single shift sample there's no telling where the two devices will be on any single shift. On average they do pretty good but on single shift they are completely all over the map.

CPDM units do not produce reproducible, consistent, or precise results. Results are very variable from unit to unit. The CPDM results are highly variable from current gravimetric samplers and do not meet either the NIOSH accuracy definition or the accuracy mandated by Congress. MSHA has not analyzed or accounted for CPDM performance in making its determination of single shift, sample accuracy, or in declaring the proposed rule feasible. And CPDM performance results demonstrate that single shift samples are neither accurate nor precise and that the proposed rule is not feasible.

Just taking this one step further into looking at mine 6 as far as what the number of samples would look like at one individual mine, mine 6 is in District 10, it's currently as of March 1st will have 18 MMUs, it falls into the continuous mining section other than auger type as listed in the rules. So basically that means an ODO is one roof bolter operator, two shuttle car operators, and then of course the DO is one continuous mining machine.

Just a couple of assumptions before we go through these slides. A CPDM can only be used one shift per day. For this mine to meet ODO quarterly sampling a minimum of six MMUs will be sampled simultaneously. 50 percent extra CPDMs are needed to replace those either having problems or being repaired. And then at the bottom you'll see the list price and the cost of the five-year service plan.

The number of PDMs required for the DOs is listed at top at 36, that's just 18 MMUs times one operator times two shifts. The ODOs required at 6 MMUs times three operators times two shifts, and then the 50 percent spares. When you add that up you get the 108 PDMs needed. At the current price today that's $1.7 million. Again this does not include any PDMs for DAs or intake sampling, it does not account for any ODO resampling. You see the reasons that that could be a possibility listed. And it also does not include any additional ODOs that may be required by the district manager.

We currently use at each of our mines one technician per 10 PDMs. 108 PDMs would require 11 new dust technicians just at this one mine. You see a very conservative estimate of their pay and benefits. That would bring on an additional $1.1 million per year. You'll see the price for the filters at $6.50

each.

When you look at those costs just for mine 6, just for one of our mines, the up front cost is over $1.7 million for the PDMs, the annual cost is over $1.1 million in employees, and over $95,000 in filters, and then you'll see that summarized at the bottom. Please note that in those costs it does not include any DA intake or other mine specific sampling requirements, does not include any costs for plan submission, does not include any training or certification cost, does not include any record keeping or related equipment, does not include any replacement of damaged equipment, and it does not include any annual equipment maintenance cost.

One other thing we would like to demonstrate when you look at the number of samples, again the DOs for this mine only, 36 samples times 240 days is 8,640 samples per year. The ODOs will require another 6,000 samples per year. That is at, just those two, DOs and ODOs would require 14,688 samples per year. Even at a 96 percent compliance rate with the new standard just this mine alone would have 588 noncompliant samples.

That would result in on average two plan changes per day. That is unfeasible. And again this does not account for any ODO resampling and the 96 percent, that's our current compliance rate with 2.0. So just making a conservative assumption and saying that we'll have the same compliance rate with 1.0 even though it's with 50 percent reduction, this mine is taking so many samples even at 96 percent compliance, 588 overcompliant samples, two plan changes per day. I don't know any mine or any MSHA district that would want to deal with one mine having two plan changes per day.

If you convert that into cost, we assume that one shift of production downtime per plan change, 588 plan changes per year, if you look at the DOE's report, take 588 shifts time 1,000 tons, that's 588,000 tons, take the DOE's cost from 2009 of 5138, that results in a economic impact of $30 million just on this one mine per year.

In summary, we as a mine and company were and still are very excited about the potential of a PDM. However, in its current form we have seen during in-mine use that the PDM still has numerous problems and cannot be used for single shift compliance. Our operators just want to do their job and want to focus on the environment around them, not stare at a PDM. The CPDMs are very beneficial for training and real time measurement of relative high and low dust concentrations.

However, neither PDMs nor CMDPSUs are reliable, accurate, or precise enough for single shift sample results or for compliance determinations. Multiple sample averages mask sample inaccuracy, variability, and feasibility analysis. Single shift sample results demonstrate lack of accuracy and the proposed rule's lack of feasibility. The proposed rule has not been demonstrated to be technologically nor economically feasible given the actual performance of the PDM and CMDPSU or its use for single shift sampling. Thank you.

MR. YANAK: Thank you. My name's Craig Yanak, C-R-A-I-G Y-A-N-A-K, and I represent Safety Y, LLC. In 2007 I retired from industry after 32 plus years of service all with the company known as CONSOL Energy and began my consulting business in 2010. Early in my career I was first introduced to respirable dust and the control thereof. In 1974 I was assigned to the job of dust sampler at a CONSOL mine in Ohio.

This was a very exciting time as development of engineering controls to reduce dust exposure was basically in its infant stages. In 1997 I was promoted to the regional manager of dust and noise control for the CONSOL eastern region where longwall mining was just getting its beginning. Longwall mining was new to me, but again a new and exciting challenge that I enjoyed, engineering dust controls for longwall mining.

I remained in this position until 1980. I continued my work on respirable dust control as the regional manager of dust and noise control at the CONSOL northern West Virginia region in 1984. I held this position until 1996 when I was promoted to the CONSOL corporate manager of mine health and safety to lead CONSOL efforts to achieve the goal of eliminated black lung.

As you can see, almost my entire 32-year career involved respirable dust control and the development of engineering controls to keep in step with an ever changing industry. During that time I also participated in numerous partnerships with industry, United Mine Workers, NIOSH, and MSHA to improve miners' health and safety with regard to respirable dust.

My first experience with tapered element technology began in 1993, which led to the machine mounted dust monitor. This was a very exciting time as we were now embarking in the technology that gave us real time feedback of dust exposure, but most importantly real time results on newly installed dust controls and their success rate. During the development of the machine mounted dust monitor many problems were encountered and discussion soon led to the development of the phase 1 PDM.

I realize this technology is now called CPDM, but because of my many years of experience with it I'll probably always refer to it as the PDM. As we know, old habits are hard to break. This unit was strictly a device to measure respirable dust. As this unit was being developed the discussions soon moved in the direction of designing a unit that would be equal or less in weight than a gravimetric dust sampler and a cap light where the two devices could be incorporated into one.

From the very beginning most if not all the underground tests and discussions of what the PDM would look like and the information it would provide was done under a partnership with the BCOA and the United Mine Workers of America with Joe Main representing the UMWA. Our common goal was and still is to eliminate coal worker's pneumoconiosis. During the years of development issues would arise such as software, set points in the PDM to indicate errors, changing, light bulbs, power management, et cetera.

Solutions to these issues would be proposed and some would be successful, but at times these would cause other issues to arise. At the time of my retirement we were still working through some of these issues. At the time of my return in 2010 I discovered some of these issues had been resolved, but in my opinion other previously unobserved issues had surfaced. During my short period of time being away from the industry one of the first things I observed was that cap light technology had grown by leaps and bounds and had tremendously moved away from my earlier thinking of incorporating a cap light into the PDM.

I have read numerous comments from miners who have worn the PDM and have stated that the unit is very heavy and that by the end of the shift it was causing their back to hurt and they preferred to wear their much lighter cap lamp. It is my opinion that with the number of items miners must wear on their mine belts, the age of the workforce, and the new cap light technology, input from the miners on wearing the existing PDM should be strongly considered, especially those who will need to wear it each shift before this proposed rule is promulgated. I recommend we move back to the initial idea for the PDM as strictly a measuring device and move away from the incorporation of the cap light.

My role as a consultant has provided me the opportunity to closely examine some of the details of the Excel file data obtained while using the PDM. CONSOL has purchased 22 PDMs that are being used as engineering tools to evaluate various engineering controls and to identify various dust sources. I have reviewed data from full shift samples as well as engineering survey samples in a wide variety of mining conditions.

I am not sure who else has taken the time to do this type of detailed review of the performance of the PDM. That is why I feel it is important for me to express some of the concerns and unexplained issues discovered in the device that is such a major part of this proposed rule. During 2010 I have reviewed numerous PDM Excel files and have observed various items that I cannot understand why they are occurring that seem quite strange to me and that I feel a need to bring these to light at this time with some definitive reason of why and how they occur.

These items are as follows. The Mass 0 total is reported to six decimal places, and I have seen this number stay the exact same for periods up to one or more hours. In an underground coal mine environment this seems quite odd to me and I cannot understand how this could happen. Second, as the Mass 0 total is not changing for these long periods, the cumulative concentration should be going down, but it's not, it's also not changing.

I have noticed times that the Mass 0 total is changing but the cumulative concentration -- that the Mass 0 total is not changing but the cumulative one concentration is also not changing for a period of 20 minutes or longer. I have observed numerous times that the end of shift concentration is not changing. It's slightly decreasing because the miners are coming out of the mine, but that the very last number at the end of the shift that is displayed on the PDM and the shift number will change. It may change slightly increase or decrease, but it is changing by a hundreds place in the very last reading of the shift.

Now this may not be a real problem if you're looking at this on a weekly averaging dose basis. But this could be a very major problem when dealing with compliance on a single shift basis as proposed in the rule. I have noticed times when the differential pressure increases slightly and at the same moment, now I'm talking maybe a minus 10 on the differential pressure, a minus 15, not a significant differential increase, it goes up slightly and at the same time the Mass 0 total increases.

Could this be a release of residual dust in the sampling line or the PDM was not, it was residual dust in the sampler line in the PDM that was not removed during the cleaning process as directed by the manufacturer, possibly retained from the sample being collected in a very high moisture atmosphere? Other concerns that I have with the PDM that I am now aware of is an increase in mass offsets errors at one of our locations. As I looked at the Excel files I could not determine a reason for the mass offset error.

In discussions with Thermo, Thermo explained that the radios that miners were carrying may be possible interference. I informed Thermo at this particular location miners were not wearing radios. During the last few years miners have begun wearing tracking devices, proximity sensors have been installed on continuous miners, variable frequency drives have been installed along with other potential sources of interference. One of these may be the source that is causing these errors, but who knows?

I believe the cause of these errors needs to be determined and Thermo needs to come up with a resolution. I have seen locations where samples collected where the relative humidity is as high as 90 percent. During in-lab testing the units were evaluated between 40 and 60 percent relative humidities and not at the levels I have observed on these Excel files. I have a concern that the amount of moisture that not all this moisture is being removed, especially if the moisture remains this high late late into the shift.

We have continued to experience ongoing charging issues, especially with melded pins on the charging plugs, filters not precisely installed, and diagnostic failures during startup that are not detected until warmup or in the next program or early into the sampling shift after the sample has been taken underground, resulting in error files. I don't know how this would be addressed in the proposed rule.

During the time change in November, we saw time changes on the files stored in the PDM. Thermo explained that they had a software fix to resolve this which would require each unit returned to Thermo, but can we expect other software issues in the future? During the years of development of this technology we have resolved a number of issues, but because of the issues I have mentioned and other smaller issues, I do not believe this technology is in such a final form to be used as a compliance tool, especially for single shift sampling.

As the work moves forward to resolve existing issues we must continue to utilize this very valuable technology to implement new engineering control and empower the miner with real time information whereby they can evaluate their work habits to reduce their overall exposure to coal dust. This will allow for a lowering of exposure to dust for miners, which is a very good thing that I have dedicated most of my career to.

We must ensure that the PDM technology issues are resolved, and I do not believe we have discovered all nor have seen the last of these issues. During the final years of my career I met with the manufacturers of personal protective equipment to discuss ways to make them more wearer friendly as I had been approached by miners as I traveled underground who were wearing these units and who had asked me to do so.

CONSOL has continued this effort very strongly since my retirement and I commend them for continuing my efforts. It has always been my belief that PPEs can provide an extra layer of protection to miners and plays a very important role as a supplement to engineering controls. As I reviewed this proposed rule I have one main overall comment. This proposal is very confusing, unclear, and complicated.

What deeply concerns me is that if this rule becomes final as it is proposed we will be regulated by MSHA PIBs, PILs, and other policy memorandums that are not available for public comment, which allows the agency to regulate as they see fit. That is not fair toward the industry nor the miners that it affects. This reminds me of the statement that I heard recently, you have to pass the rule to find out what's in it. Thank you.

MR. HARTSOG: Good morning. My name's Gary Hartsog, H-A-R-T-S-O-G, with Alpha Engineering Services in Beckley, West Virginia. The bulk of our practice is in providing engineering services to the mining industry. We work around the country. The bulk of our work involves ventilation, mine design, and such services. The proposed modifications to Part 75 is the area that I'm addressing today.

There are five main areas in Part 75 that are involved in this rule, proposed rule. Redefinition of where to measure air flows going to the working face, a redefinition of and new requirements for some of the provisions in the ventilation plan, a redefinition of the respirable dust concentrations allowed in air coming to the working section from a belt line when that is approved in the ventilation plan, extensive new examination and record keeping requirements regarding respirable dust control equipment, and a redefinition of how the working section is to be ventilated when there is more than one continuous miner or loading unit at work.

The bulk of my comments will be on the last issue, which is covered under 75.332(a)(1). The other four areas we'll comment on but those will be in our written comments later. The change in 75.332 is perhaps the least explained and the least transparent change in all of these rules, very difficult to understand and lacks a lot of clarity in what's intended.

There are no references that I could identify in the references section in the Federal Register, so I had no place to go to look for exactly where these changes come from. Only in the commentary do we find the justification for the changes. In the commentary it says MSHA believes, and that's my emphasis, MSHA believes that together the proposed 75.332 and the proposed MMU definition would improve miners' health by reducing their exposure to respirable dust.

The new definition of MMU would require separate intakes for each MMU as is put forward, and each MMU must have a separate intake, but it doesn't tell us where that comes from. One must assume based on taking it to its extreme that it would have to come from the surface, therefore be something akin to what the escapeway rule requires. That's what one would assume from the way that it's written. Well we don't know because there are other ways to do that but there's a lack of specificity here that allows us to evaluate it.

Therefore, the stated effect of the proposed rule is to eliminate the operation of two continuous miners on the same working section, definitely eliminating them at the same time. The effect would be to eliminate the supersection system of mining. Now the supersection is a very loose term, has a very loose definition depending on the region of the country, the area perhaps from mine to mine even within the same company.

To try to put forward a brief description of supersection, there are basically two kinds. One's what we refer to sometimes as a true or full supersection. This is where we're using fishtail air to ventilate two miners that work at the same time so that there is a split of intake air for each miner on the section. The second kind is what we refer to as a walk-between. This could be either on a fishtail ventilation system or it could be in a what's called a sweep ventilation system. But with the walk-between you literally walk between two continuous miners, one would be cutting and loading while the other one may be repositioned or moved between places.

And for the sake of completeness then there's the single section which is one continuous miner working and could be with fishtail, it could be with sweep ventilation. To try to explain that just a little bit further, if you would look at the diagram on the sheet, this is a very very generic diagram of a face ventilation scheme using fishtail ventilation.

In this particular scheme if we look at the single headed arrows on the right side, green arrows coming in, this is intake air, fresh air coming into the mine. That air goes through inby the working section tailpiece to a point where it splits here in the middle. A split of the intake air goes to the left, a split goes to the right, and then it works its way out by in the red double-headed arrows where we have returns on both sides. Thus the name fishtail.

In this particular example we're looking at having two continuous miners, one continuous miner working this side of the working faces, another continuous miner working this side of the working faces, that would be the left side and the right side. In each of these cases you'll note that there is a separate split of intake air that ventilates the two miners as they're cutting simultaneously.

For those that may not be accustomed to looking at these maps and since the regulation discusses it, these double lines are what we refer to as stoppings, those are permanent ventilation controls. The Cs with the line through them are curtains or brattices which are temporary ventilation controls that moves as the section moves inby.

We don't have a good number of how many supersections are out there. MSHA has that data, if they would like to gather it. It would be very helpful to know how many supersections are out there. I took a look at some of the records that we have in our office and came up with an estimate of possibly, well I'd say at least a quarter of the MMUs or sections in the country have some supersection, or excuse me, supersection capability. That might be that they've got two miners, they may work one as a spare, they may work them full time as a full supersection. But we're looking at somewhere probably in the neighborhood of a quarter.

Now I understand from Assistant Secretary Main the other day that there's some 800, 850 MMUs in the country. That means that about a quarter of the MMUs, 200, would be impacted by this rule, this part of the rule. And so that would throw maybe 100 MMUs into some kind of change or elimination in this rule. These production sections are some of the most efficient and safe units we have. They're very productive. And sometimes in some mines that we're very familiar with the mine's existence economically is based on using these supersections.

MSHA has not done an analysis that I'm familiar with or has produced in the Federal Register that talks about the loss of jobs that would be involved or the feasibility of operating these mines without these let's say hundred MMUs. Neither has MSHA analyzed whether the mines could make up for the lost production or the impact of trying to make up for the lost production in these mines.

Now it's been said that there's a possibility, well, you know, just split the supersection into two sections. Now that's simplistic because that would require more permanent ventilation devices, a lot more overcast stoppings, ventilation controls. It would add, if you take for example the section that I showed there and divided it into two single sections, at the very least there would be one additional set of neutrals and belt line, there would be at the very least another belt, there would be additional belt flights to support that infrastructure like high voltage line, switch gear, we're talking about additional SCSRs, additional feeders, additional shelters, would be required to if you just simply split them up.

Now we haven't talked about the additional load on the ventilation system. The load on the ventilation system would be significant because any time you're required to have additional controls, additional airflow, that translates into more pressure, that translates into more leakage, that in effect translates into more mine openings, more mine fans, and a more complex mining ventilation system. So MSHA hasn't analyzed even if such changes are technologically feasible for the impacted mines and whether or not those mines would be economical.

In summary, the need for the benefits or the benefits from the change in 75.332 are not documented, haven't been analyzed, and really haven't been explained. I noticed Dr. Wagner asked in the beginning if we could provide alternatives for the supersection concept. Any engineer when you hand him a problem like that is going to say, define the problem. At this point I don't think the problem's been defined. I haven't been able to find that data.

The effects of 75.332 to eliminate the supersection system of mining has no justification in the Federal Register other than MSHA believes that it should be done. We've already talked about more complicated mine plans, more complicated ventilation controls, more air required, more shafts required, and reduced production levels because of it. The proposed rule should be withdrawn due to a lack of analysis to support the need for this rule change.

DR. COX: Good morning. I'm Tony Cox, I'm President of Cox Associates in Denver. I am a clinical professor of preventative medicine and biometrics at the University of Colorado Health Sciences Center. And let's see, what's the process for getting my slides loaded? If some technically competent person will do that I'll start my presentation with that.

Okay, so I want to examine a puzzle with you. We've heard from a number of folks in the last hour about what a pain the proposed changes will be, they may not be feasible, they're going to be difficult, and so forth. I think if that were the price of saving human lives we might just say, well, yeah let's suck it up and get on with it because it's worth it to eliminate black lung.

But we also have this puzzle that standards have been going down for quite a while and lung disease has been inching up. So there seems to be a little bit of a disconnect between what we're doing and what's happening and it's not clear that doing more of it is going to solve that problem. Whether it will solve the problem requires us to figure out what's going on.

So I want to talk about current flaws. I don't want to call anybody's baby ugly because, just because it may be offensive, but I think there are some problems in the risk analysis. And I'm a risk analyst and I want to talk about the flaws that I see and suggest some possible fixes. Possible fixes are usually the form, do this better and we know how to do it better, there's a lot of literature.

So track my reasoning. When somebody hands me a document more than 100 pages long and says, what do you think? At least if it says risk analysis on it I usually do what I think most professional risk analysts do, I start looking into the sections of the document. I look at the hazard identification section which says how do we know that there's a problem with current standards, how do we know that the current standard is causing diseases?

Don't tell me, well there's still diseases and we've got the current standard, because what we don't know is well what exposures are causing the diseases that we see right now? They're not all exposures right at the existing standard. So there needs to be a hazard identification section. Then an exposure assessment section. I heard and I smiled several times this morning, I heard the word "distribution".

Yes there is a distribution of exposures. We need to know what that distribution is and how much of that distribution is causing diseases. Then there's the exposure response relationship which connects how much are you exposed to to what's the probability that you are going to get some form of black lung. Risk characterization puts those parts together and says, here is today's exposure distribution and if we do things differently here's how that distribution's going to change.

We can feed each part of that distribution through the exposure response relationship and predict how many people who are exposed to that level are going to get a disease. And so we put those pieces together, we integrate them, that's the risk characterization. Uncertainty says, how sure are you? Do we have the right models? Are we pretty sure about that? Could things stay the same, could they get worse? Well I mean we know that they could because that's what's been happening, but we want to see in the uncertainty characterization how likely that is.

And then I'm going to, so I'm going to step through these five parts and then give you my conclusions and recommendations. Now you might get a depressing feeling because it's 11:10 already and if we go through these five parts we're going to be here all day. But I've simplified matters. I jotted down some notes when I first went up to the document and I noticed there isn't really a hazard identification section the way I'm thinking about it. There's no part that wrestles with or discusses the issue of do currently permitted exposure levels cause incremental harm.

There's a lot of data saying, in the bad old days people were exposed to levels that we can estimate and people got sick at rates that we can estimate, but there's no discussion so what's the hazard today, how do we know that, where's the toxicological evidence, what's the clinical evidence. Also the exposure response relationship, now this may catch you by surprise, caught me by surprise, the exposure response relationship actually isn't there.

There are some beautiful looking graphs that have exposure on the X axis and they've got response on the Y axis so if you look at them you think, wow well there's an exposure response relationship. And by the way they all point up, they're all smooth, they look gorgeous. But they're actually not exposure response relationships in the way that risk analysts mean it. The way risk analysts mean it is, if we change exposure how will response change? Not talking about regressive and past values of exposure against past values of response, which is an association based, regression based approach.

I'm talking about if we change future exposures will future risks change? That's the exposure response relationship of interest, and that relationship is not developed in the current QRA.

It's kind of crucial. Then, and this just it makes me mad, there is no uncertainty characterization. Why not? It's manipulative, if you'll pardon my saying so, to show an upward sloping graph with no confidence bands, no model uncertainty, no sensitivity analysis, because a poor decision maker confronted with this overwhelming graph is only going to have one possible conclusion available, namely, keep cranking down the permitted exposures and you will see fewer and fewer deaths, that's the only possible conclusion.

But that's not the only possible reality. There's a lot of uncertainty about reality that's omitted from the current QRA. So the parts that are there, again not trying to provoke an adverse reaction here, but the exposure assessment part focuses on mean exposures. And I would ask, who the heck cares about mean exposures and why?

I'm going to argue that what we know now as opposed to eight years ago about the toxicology of inflammatory and inflammation mediated lung disease says it's high cumulative exposures for a long time that do the damage, and you will have some people with those exposures at any given mean level of exposure but it's not because the mean level is causing the damage it's because there is variability around the mean level and some of that translates into variability in cumulative exposure.

And some people by luck of the draw had a high exposure today and they will have a high exposure next year and they're going to have a lot of high exposures for the same reason that when you drop a whole bunch of marbles down through some kind of percolation system some of them just happen to end up on the right end, and those are people, if you'll let me mix metaphors, those all right the people who are disproportionately at risk.

We've got to take that into account. Without doing that we can't answer the kinds of questions that risk analysts care about and our risk characterization won't be correct because it's not putting the distribution of exposures through the dose response model. We won't be able to say, what would happen if we left present standards exactly how they are and enforced them? What would that do to future risks, would that eliminate future risks? We don't know.

All we have in the QRA is something that says, well you know there's still risk at the current mean. Well I know that, you know that, but what about the current variance? We need to know about the current variance. What is the probability that if we tighten up the standards more risk won't decrease? What's the probability that we'll see what we have seen over the last ten years, which is we keep tightening the standards and the risk keeps going up, how likely is that?

Well if you look in the rear view mirror it may be 100 percent, but according to the uncertainty analysis, the risk analysis, how likely is it? We don't know. We need to know if we're going to be informed decision makers. Okay, we've talked a bit about the effects of single shift sampling. I'm just going to say the same kind of rigorous analysis, will we be making more mistakes or fewer mistakes, what is the sampling variance, what is the distribution and are we getting a misperception of that distribution when we sample single shifts?

These are things that need to be answered that have not yet been well or responsively. So let me now take this from, break this down to the steps and move through them quickly. The hazard identification step, the way it hits us when we look at policy questions is, do current levels pose a hazard, do they elevate risk? What's the weight of evidence? What's the toxicological, the clinical, the epidemiological evidence? Where is it, what do we think of it, how do we weigh it?

MSHA's QRA is good at stating its assumptions. It states its assumptions and it notes that some of them are uncertain. One of its assumptions is that mean cumulative exposure drives risk. Toxicologists don't see it that way. It's good that those assumptions are stated, but now they need to be debated because they are not toxicologically accurate.

Over and over throughout the QRA I get the sense that this is like a legal document being prepared to defend a particular point of view, not an inquiry into what are the risks and how do we know. We have to be careful at avoiding, I've been amused by the term now in popular literature of proofiness. Proofiness is the idea that we know in our hearts that, well exposure isn't good for you so if you cut back on it you're going to have fewer diseases.

Well that makes sense, but knowing it in our hearts doesn't make it true. Proofiness is the art of using bogus mathematical arguments, these are arguments that don't actually drive the conclusion but start with the conclusion, to prove something that you know in your heart is true even if it isn't. You don't want to be in that situation, I don't want to be in that situation, none of us wants to be in that situation, so we have to use proper risk analysis to avoid it.

All right, let me give you an example of bogus thinking or proofiness thinking. Suppose you say, well you know exposure's been coming down and disease rates have been coming down. These exhibits are not from the QRA, I'm just now sharing with you a popular way of thinking. Well isn't that good news? Doesn't that suggest that when exposure comes down disease also comes down? It comes down more for people who've had longer tenures, it comes down not so that you can notice it for people who've only worked for a few years, but that's okay, we want to protect the high risk people anyway.

Well it might suggest that, that's one possibility, it's not unreasonable. Where proofiness would come in is accepting that we've just shown a cause and effect relationship. But there's a lot of other stuff going on. Smoking has been coming down. Yay, that's good news. I heard this morning from Dr. Wagner the claim, you know, respirable coal dust causes black lung disease, and it does but it's not the only cause. You know what else causes it? Bad nutrition, poverty, smoking, big one for smoking.

Significant effect but we don't know why for poverty. There's a network of causes and absolutely exposure is one of those, but we need to figure out if we change exposure how will the disease change. It won't disappear, it's modulated by this network. Other diseases will come down too. This thing on the right is looking at silicosis, but it's not just silicosis among coal mine workers, it's been coming down in multiple industries as smoking has been coming down.

These are interacting causes. So again, what we want to avoid is saying, I'm going to attribute 100 percent of the decline in the diseases that I don't like to the things that I can control. You don't want to do that unless it's true, and you need to do some work to show whether or not it's true. Regression, ladies and gents, is the wrong statistical tool for this job. Now this is a big technical point but I don't have the time to emphasize it as much as it deserves to be emphasized.

I will tell you this. If you take two completely random time series, these are random walks, your eye will fool you. It'll say, you know what, when one goes up the other goes up. But if you look carefully you'll see that's not true, they're statistically independent random walks. Both of them have downward trends as random walks tend to do, as many processes tend to do because they're correlated with themselves over time.

If you regress one trend variable against another you'll always find strong correlation and a strong regression relation between them. Why? Because the fact that they're both trending means that high values from one tend to occur, co-occur with high values of the other. Low values of one tend to co-occur with low values of the other. But then regressing or looking at correlations between two trend variables without taking into account that time itself is playing a confounding role gives you garbage, it gives you junk correlations.

And I, it would be an exaggeration to say that I weep to report, but I do report that the QRA has relied on previously published regression models that regress one trend against the other without doing the causal analysis needed to say, so when you take out the confounding effects of time is there a causal impact of one thing on another? I'm sure there is -- I'm not sure but I sure suspect that there is. But the work hasn't been done to pull out the causal contribution.

So we've got a bunch of regression models that are heavily contaminated by what's called spurious regression. So if we went back and did hazard identification what do I think we would find? I haven't done it, I don't, in this document I don't see it, but I think the starting point for sound hazard identification has to be with the toxicology and clinical pathology of lung disease. And those disciplines teach us, or at least they teach me and I think they should teach all of us, that lung diseases that result from chronic insult and inflammation and eventually unresolved inflammation, influx of macrophages, production of a high reactive oxygen species environment and then activation feedback loops, lead to destruction of the lung and fibrosis and so forth, these are very much threshold processes from a toxicological point of view.

People didn't know that ten years ago, although some experts, Oberdorster, for example found in rats that this was the case, but there has been more and more evidence that it is true. And it's true in a number of ways. At an intuitive level what happens is that low levels of exposure and low levels of cumulative exposure do irritate the lung but the lung can compensate. Specifically, you get more levels of good old antioxidants which we hear about on TV all the time and read about everywhere, and they're really important in lung diseases.

At higher levels, reactive oxygen species and nitrogen species overwhelm the quite limited capacity of the lung to generate more antioxidant when needed and you begin to develop chronic lung diseases which can then progress into different types of pathology. The point here is that it's not true that half the concentration for equally long would create half the damage. In fact, the dose response relationship is much more threshold like than that.

And I think any useful risk assessment needs to acknowledge and address the toxicological reality. We need to start from the question of how much exposure are people getting that's dangerous and that might cause illness or death in these people? What's the disease causing component of exposure? So I've sketched a curve here, and this doesn't have to be the right curve, the actual exact shape of the right curve hardly matters. What does matter is it's a lot higher at one end than at the other end.

Above a certain exposure concentration for a long number of years, because you need both, you're going to be at risk of a high ROS, reactive oxygen species, lung environment, and that can lead to all kinds of diseases. And below that threshold you won't. So when we look again at our key question, do currently permitted levels of exposure, if we enforce them, increase the risk of harm, what we're really saying is, are we up here or are we down there?

Don't talk to me about the mean, talk to me about the distribution and how much of that distribution is in the high risk area. That's the only thing that matters in quantifying risk. Now let's put that perspective onto the analysis of past data. In the past there were extreme levels of exposure that were a lot higher than mean levels of exposure and sometimes higher than permitted levels of exposure.

The current QRA focuses on mean levels of exposure, and it's in good company here. It and past peer reviewed journal publications have attributed health risks to mean levels of exposure, but that runs the risk, doesn't it, of attributing the effects of relatively high exposures to much lower and relatively harmless mean exposures.

In other words the risk attributed to mean cumulative exposures may have been caused by much larger, not peak exposures, that's the wrong concept, extreme exposures. I'm talking about cumulative exposures on a time frame or a time scale of decades that for some people will be four or five times higher than for other people because that's the way these random cumulative processes work.

So this raises another issue. There's a huge distinction between the risk that's attributed to something and the risk that's caused by it. And many epidemiologists, although not all, recognize that one has literally nothing to do with the other. What I mean by that is attributable risk can go up even for something that's actually protective. That's because attributable risk is based entirely on association data, not on cause and effect data.

People who don't know that tend to be shocked by it. What do you mean the attributable risk is 100 percent and there's no real risk? How can that be? The answer is, really easily. Get out your favorite epidemiological textbook. Mine would be the old Rothman and Sander Greenland textbook. Look up attributable risk. You'll see that situations in which past high exposures get attributed to past mean exposures, it's not an unusual situation, but it plays merry hell with the ability to forecast what will happen when we start changing exposures going forward. For that, attribution is not an adequate tool.

So the QRA doesn't actually tell us what will happen if we enforce currently permitted levels. It doesn't actually tell us what will happen if we change the distribution of future exposures because it is based on past data. Well I mean what else is it going to be based on? It's not going to be based on future data. But in looking at that past data it doesn't draw the distinction that I've just laid out for you between attributable risk and risk caused by a given level of exposure.

And that's a huge difference. Without that distinction, future projections are meaningless. So estimates of mean cumulative exposure, I hate to say it but I have to say it, they are inappropriate for risk assessment especially when the means may be below the level that cause harm. We're just, we're looking at the wrong exposure metric. What we should be looking at is the proportion of the distribution that is in the high risk or response region. That is the relevant exposure metric and it has not been quantified.

Now MSHA does inflate its exposure estimates, and it does so deliberately in some ways but I think it does so undeliberately in others. The deliberate ways have to do with saying, well look when two exposure estimates disagree and one of them was collected by industry and one of them wasn't, which are you going to believe? Yeah let's be conservative here and take the high side. Okay, we can do that.

Yes, it may bias things upwards. For example if it turns out both sets of measurements were unbiased but had some variability, well about half the time you'd end up correcting the lower one in favor of the higher one and that would introduce an upward bias but it would be worth it if it were truly health protective. However, notice this. The QRA says in at least half a dozen different places, you know what we might have underestimated past exposures. Maybe deliberately maybe not deliberately but could have been underestimated, that's pretty plausible.

Okay, if that's true then past dose response relations overestimated the potency of past exposures. You see what I mean? If past exposures were twice as high in reality as we thought and they produced a certain number of illnesses, then the potency of that exposure was about half of what we thought it was because it still produced that total number of illnesses. It doesn't make sense to increase your exposure estimates and not counteradjust your dose response estimates, they have to be done together, and as far as I can see they're not being done together.

Then the way in which the exposure estimates are biased hugely without I think realizing it is that throughout the report and again throughout much of the literature, so the report I admire for its scholarship in laying out its assumptions and its references in many places, but there is a pervasive error which is that exposures that are uncertain should not be analyzed using tools such as regression without adjustment for uncertainty in exposure.

Why not? Because those high risk areas are going to be systematically attributed to lower mean exposures. That's going to mess up all your calculations. And there are whole books, big thick scholarly books, that not only document the problem in chapter 1 but then say, and here's what to do about it. I mean the good news is using the same data but pushing different buttons in your SAS procedure or whatever your favorite statistics package is, you can correct for the effects of measurement error.

If you don't, you introduce large biases which can actually go in either direction. But there is some literature out there which suggests that for respiratory diseases it may be upward. Okay, so that's enough about exposure. Exposure is most of the current QRA, there's a lot of detail about exposure estimates. Let's quickly talk about exposure response modeling.

The idea of an exposure response model is it says, well here is the probability that you'll get the illness if this is your exposure level. But to do that you need to talk about what are the actual levels of exposure, not the attributed mean levels, and that hasn't been done. No causal exposure response relationship has been established. How about these beautiful graphs? Absolutely lovely. Not relevant for predicting how a change in the X axis will change things on the Y axis.

It's very tempting to interpret them that way, but what we're actually looking at is three curves here, because we're looking at three different agents, but just focus your eyes on the middle one let's say. What we're looking at is a curve fit to past levels of exposure and past levels of disease. So we're looking at the Attfield models and the other similar models that fit a regression, so we have the conditional logistic regression model, to these past levels.

That's a description of the past and that's all it is. It is not a license to say, and therefore if in the future we change the average dust concentration from 1.5 to 1 or from 1 to .5 then we will decrease whatever's on the Y axis which here is excess risk, the exact thing we want to decrease. It's not a license to say by going leftward on the X axis we will come down on the Y axis. It's really tempting other think that that's what that plot is. It isn't. No, it's telling you about yesterday's associations, not tomorrow's cause and effect changes. And they are entirely different relationships.

Okay, I'm not going to, in the interest of time I'm not going to beat on this whole thing again, that attribution is different from causation. But I am going to say we shouldn't be using retrospective attributable risk saying, here's the proportion of last decade's risk that I choose to attribute to coal dust. That's magic, that's not science. We need to be doing causal modeling that says, when I change this toxicologically and in reality, epidemiologically in terms of clinical data, here's how lung disease will change.

So now we're approaching the end. Risk characterization. Risk characterization should show the frequency and the severity of health effects with and without the proposed rule. And again I complement the current QRA is set up exactly in that form, but I think a lot of details need to be changed for the answers to be correct and credible. MSHA has not performed a risk characterization, I keep saying but only because it's true, for the effects of proposed actions. Its basic analysis is not set up to be a causal model. Rats, that means no causal modeling, no accurate or validated predictions.

And we have to be careful not to fool ourselves. You don't have to make bogus claims. You could easily show this and say, this is a description when we fit a curve or when somebody else fits a curve to historical data, this is a description of what levels of average concentration we found in conjunction with what levels of disease. Some of those diseases were caused by smoking, some of those diseases would have occurred even if concentration had been zero.

In fact, embarrassingly enough, some of the models do show a 4.4 fold relative risk even when there's zero exposure. Oops. An appendix of the QRA says you have to be really cautious in using these numbers. I agree with that except I'd say don't use them. You know what, if you're attributing risks and when there's zero exposure, it's probably not a good model to be using.

To avoid making bogus claims we just have to remember this is not about predicting the future, it's entirely a description of associations from the past. And there's a bunch of stuff missing, for example the confounding effects of smoking, arguments about how risk should be attributed, better yet how risk should be predicted which is a whole other exercise.

As long as we don't confuse this with an exposure response relationship that can be used to project benefits from lower exposures then we're in good shape. But that's exactly the way we're starting to misinterpret this, we're falling into making bogus claims by misinterpreting the statistical meaning of this thing.

So my recommendation is extend the risk characterization to address realistic frequency distributions of exposure history. Don't give me a scenario, a hypothetical scenario. Talk to me about distributions and about the dangerous part of the distribution and about how that dangerous part is going to change. Remove the effects of confounders such as smoking or time itself in the case of spurious regression.

Account for estimation errors. You probably can't remove them, but just use the statistical tools that are appropriate for exposure data that's measured with error. You know that your exposure estimates are estimates. Okay, use the appropriate statistical tools. Use validated causal models. This is a plea. How do you do that? Well again there are good technical methods for getting at causal models in time series. Let's use them instead of retrospective attribution which is just a policy call.

Uncertainty characterization. I really wish we could look at this middle line and say, you know what here's the upper 95 percent and there's the lower 95 percent confidence limit, but that's not what we have. These are three different curves for three different age groups and there are no confidence limits shown. And this is embarrassing. This is not how risk analysis should ever be done.

More important even than showing confidence limits is you have to say something about model uncertainty. I'm going to ask you again, just think, suppose we were getting coffee -- getting to be that time anyway, getting lunch. All right, suppose we're sitting together at lunch and just talking about, okay you know how sure are we that this implication that making exposure lower and lower all the way down to zero is going to reduce excess risks, lower and lower all the way down to zero, how confident are we in that?

And I think if you thought about recent history you'd realize you're not at all confident about that. That hasn't been what's happening, it hasn't been what's happening. In fact, it's possible that we would vary average dust concentration yet more. And you know what, if we've already picked the low hanging fruit and if there isn't other low hanging fruit to be picked then varying this more isn't going to produce any benefits. So I put a question mark here, is it possible that that's the correct relationship?

Or is it possible that in some weird way that we haven't figured out because we haven't paid attention to variance that when we crank down the mean we're sending up variance? How exactly are our acts being implemented and what does it do to the variance around the mean? Golly I sure hope it's not the case that we're causing excess risks. I don't see how that would work, but I don't understand how the variance gets caused.

What I do know is that an uncertainty analysis should lay out for the decision maker how sure are we that the promise in these curves is true, that by reducing more and more exposure we'll reduce more and more risk. Let's look at this from the decision maker's point of view. Sorry, all the decision maker gets to see is this kind of curve. What will a decision maker believe? What would any sane person believe if this was the only information presented?

He or she would necessarily believe that the only right and ethical and effective thing to do is to keep cranking down exposure and no matter how much you crank it down you can always crank it down more and risk will go down, and in fact the marginal benefits because the way this evens may be slightly reduced, but basically reduction is always a good idea. Bologna. That's not the way the world works toxicologically. Once you're below the threshold you're below the threshold. Cutting it in half isn't going to buy you anything more. We need to see those uncertainties. Where are they? We need to see that kind of risk analysis.

Okay, single shift sampling, others more knowledgeable than I are going to talk more about it so I'm going to spare you this. I'm just going to say the same issues of distribution, threshold, and by the way error rates, are we pouncing on problems that don't exist? Are we really saving lives here or just making things more difficult and expensive without doing any good? That is the key question that needs to be addressed on the single shift sampling. And the way to address it is by using sophisticated statistics.

What I mean by that is there's a whole beautiful branch of statistics on how to design sampling and decision rules. Decision rule says, when I hit a certain boundary here's what I'm going to do, when my sample looks like this here's the action I'm going to take. Quantify for me the probability that taking the wrong action at the wrong time, either wrong by not intervening when you should or wrong by intervening when you shouldn't, attach some costs to those things. Use statistical decision theory.

Don't say, you know there are a lot of advantages to using the new technology and the single shift but we don't actually know what the performance would be in terms of reducing risk or reducing error rates. We should know that. I think it's possible to know that. We need to do more work to know it. So my summary is the hazard identification, the part that argues and wrestles with what the current data say about the toxicology and the reality of risk, ought to be in there. It's not in there.

Exposure assessment. Forget about means, or if you don't forget about them, I mean that may break a 40-year-old habit so let's not forget about them, but let's show distributions, distributions are crucial. Exposure response relationship, give me a real one based on causality. Don't look in the rear view mirror and give me an association based on regressing one trend variable against another. That is pure bogus, doesn't pass the straight face test.

Risk characterization, well after we've done good exposure assessment and good exposure response modeling then we can do good risk characterization. Uncertainty characterization, put it in. If it's omitted you're being irresponsible. You're being irresponsible to the decision maker because you're saying to the decision maker, I promise you this is how the world works, and you're not in a position to say that. I don't think that's anybody's intent, so put your intent into the uncertainty characterization that's part of any good quantitative risk assessment.

And finally, conclusions and

recommendations, let's fix what's broken. This is not hard to do. What I mean by that is there are really good statistical software packages and a lot of sophistication and with more work you can do it. It's not that new conceptual ground needs to be broken. What are the things that are missing? Add the missing hazard identification section. Add the missing exposure response modeling, the causal part. Add the missing uncertainty characterization so that you're being responsible to the decision makers.

Correct or withdraw. The current QRA has noble ambitions. It says, we don't want to be biased. What are we going to do to correct biases? We want to be able to effect how changing, adopting this new program will affect future risks, see here the graphs that we have. It's trying to do exactly the right things, but it's not doing them correctly in my professional opinion.

So I guess what this comes down to is, well so therefore let's do them correctly, and until they're done correctly let's very carefully scrutinize the language in the QRA which because of its noble ambitions outstrips what's actually been accomplished. Okay, thank you.

MR. GLENN: Thank you very much. My name is

Bob Glenn, for the record the spelling of the last name G-L-E-N-N. With me today is Dr. John Gamble who will speak next, and we'd like to also acknowledge our colleague Dr. Robert Reger who was instrumental in helping us with this review of the scientific basis for MSHA's proposal for lowering the coal mine dust standard.

What we're going to cover today, we're going to talk about in this presentation, is summarize the epidemiological evidence regarding the risk factors associated with rapidly progressive CWP, or coal worker's pneumoconiosis, what has been termed a sentinel health event and is actually a failure in primary prevention of disease.

We're also going to look at exposure response relationships of coal mine dust in coal worker's pneumoconiosis because if you're attempting to set a standard these are the studies that are most informative if you're going to try and determine where is the threshold and what safety factor would you use and then what the level would be to prevent occupational illness.

We're also going to look at some other risk factors. We're going to look at the role that quartz can play in these studies and has played in some of these studies that have been reported. We're going to look at also coal rank, are certain coals based on their carbon content more pulmonary fibrogenic than other coals.

We're also going to look at bias and confounding low participation rates in these studies, and something that Dr. Cox mentioned, bias is an exposure estimate and how that might affect the interpretation of the data. And then the results from our evaluation are used to assess whether the current coal mine dust standard is protective and whether the proposed lowering of the standard is scientifically based.

MSHA's rationale for lowering the coal mine dust is that in the past decade there have been reports in a slight increase in prevalence of coal worker's pneumoconiosis. Moreover, they report there have been cases of rapidly progressive coal worker's pneumoconiosis. This is occurring in younger miners and is also occurring in miners that have been exposed for a short period of time, perhaps only in the time since the coal dust standards 2 milligrams was in place.

Also according to NIOSH they say that new exposure response estimates were predicting an occurrence of CWP at various cumulative exposure levels. The estimates now show that there's greater disease or greater risk than previously shown. And these seem to be the main points or the main rationale for proposing to lower the coal mine dust standard.

First let's look at rapidly progressive coal worker's pneumoconiosis. I've used an acronym RPCWP for these, but essentially these cases for the most part have been clustered in the southern Appalachian region of western Virginia, southern West Virginia, and eastern Kentucky. RPCWP cases are more characteristic of silicosis than CWP and are associated with R type opacities on the chest radiograph.

The ILO classification for chest films for the pneumoconiosis defines two shape factors of rounded opacities and irregular opacities. Rounded opacities are more consistent with an etiology of coal dust or silica whereas irregular opacities are more consistent with a fiber exposure such as asbestos. And NIOSH has determined that from pathology studies that R type opacities are more frequently seen with silicosis.

For the southern Appalachian region the prevalence of both R type opacities and progressive massive fibrosis increased with each decade that we will look at. And the effect of this increase we see a small mine effect, it's particularly pronounced in mines with less than 50 miners. And this evidence certainly is convincing that increased quartz exposure is an important if not the explanatory factor in these cases of rapidly progressive CWP.

So that was a conclusion of rapidly progressive CWP. Now let's show what the actual studies show us. Beginning in the mid '90s an increase in a more severe RPCWP was noted, these were reported mainly by NIOSH or entirely by NIOSH. Despite the apparent stability of coal mine dust exposure levels, during the same period we have seen coal mine dust levels remaining rather static.

So the change in the RPCWP occurrence was identified as a sentinel health event. As I mentioned, this is essentially evidence of a failure in primary prevention. It occurred as mentioned before in the southern Appalachian region, and there are several potential causal factors that have been investigated or have been looked at to explain these changes in the severity of progression as well as why it's more common or perhaps more common in the SAR.

This is a study that was of two counties, RPCWP of two counties in western Virginia, Wise and Lee County, and this was reported in the Morbidity Mortality Weekly Reporter which is a CDC publication. The authors proposed several hypotheses regarding this more or less outbreak of RPCWP. One, that the coal mine dust standard is too high. Two, that dust levels are actually above the MSHA standard and operated data, and that silica might be a contributing factor.

I think when you look at this study closely the inferences that are drawn by the authors are not really supported by the data. First, coal mine dust levels in these two counties were below the standard from 1972 to 2005 on average and were below the REL, the NIOSH REL of 1 milligram per cubic meter since 1995. And here's that data of coal dust and you can see that, well you can't see but believe me, I wouldn't steer you wrong, that after 1973 coal mine dust levels became below 2 milligrams per cubic meter shown here, 1 milligram per cubic meter here, and they remain rather constant for this entire period until 1995 when they then dip below 1 milligram per cubic meter.

So I would say that certainly coal mine dust levels don't appear to be what's causing this outbreak of RPCWP. Now the authors suggest that the compliance samples may be biased, and Dr. Cox mentioned something about that. But when you look at this data that I showed you on these coal mine dust samples, and that suggestion by the way came from studies of Dr. Boden and Gold and also a study of Dr. James Weeks, but when you look at that there are over 120,000 measurements of coal dust in these mines in these two counties of west Virginia.

So I don't really think, and as you can see while there's some variability about this it's pretty close agreement in these measurements even of operator and MSHA samples. The dark line is the inspector samples and the other line is the operator samples. They suggest next silica might be a contributing factor and I'd have to say I do agree with them there.

Sampling for silica from the 1980s, actually in the early 1980s, MSHA became quite concerned about silica admixed in coal and in the strata above and below the coal and they started a rather rigorous program of sampling for crystalline silica, or quartz. And you can see that from 1980 up until about the late 1990s exposure levels with quartz were above the .1 limit or .1 level, and actually NIOSH recommends 50 micrograms for quartz.

And so you had exposures that were on

average three to four times above the exposure limit. This is three to four times and this is for a period of 18 years. And we know that if you expose individuals or groups to silica for that length of time the latency is generally considered to be more than ten years. So I think it's kind of apparent that these are no doubt silicosis cases.

Further looking at sampling data, 65 percent of these silica samples between 1982 and 2000 exceeded the NIOSH REL, so almost two out of three were above the NIOSH recommendation. And only since 2001 have they been below the NIOSH REL. So I would suggest that silica is the major contributing factor in these cases of what have been termed rapid progressive coal worker's pneumoconiosis.

This next article is by Antao and Petsonk reported in 2005, and it looked at rapidly progressive coal worker's pneumoconiosis in the U.S. and especially looked at geographical clustering and other factors. This is a subset of a nationwide study of 29,000 coal miners in the coal worker's X-ray surveillance program from '96 to 2002 and the miner's choice program that MSHA was instrumental in from 1999 to 2002.

And it includes miners that had at least two chest X-rays during this period because with two X-rays they could look at progression. And if a miner had a 1/1 on the most recent X-ray then they were included in the analysis. Rapidly progressive CWP was defined as greater than 1 ILO subcategory over five years and/or the development of progressive massive fibrosis.

The real stated group of interests is reduced to these 277 miners that were found to be rapidly progressing, and then there were 506 miners who did not progress rapidly. And you can see the characteristics of the two groups here. The thing got to be mentioned though is again you see this small mine effect. Miners in mines with less than 50 workers were 1.5 times more likely to be a rapid progresser than miners in larger mines.

In Table 1 of the report in this paper there were 295 rapid progressive cases in 25 counties, and this essentially took a county for 40 percent of all of the rapid progressive cases. This 295 number is at odds with the 277 on the previous slide which is in the text, and I'm not sure what the reason. So were the younger miners were younger than miners without rapid progression, it was a difference of 48 years versus 51 years. That's not a large difference but it doesn't matter whether you're 48 and 51 or whether you're 58 and 61 or 68 and 71, if you're getting rapidly progressive CWP that's a concern certainly, so I don't mean to downplay that this is not important.

They were most likely to work in smaller mines again. They did not differ with respect to mean underground tenure. They did report more face work, more work at the coal face. And again this geographical clustering took place in the SAR. Interestingly this clustering effect had been noted earlier back in 1973 in the Appalachian region in an article by Amandus and Reger. So the cases of rapidly progressive CWP can be considered as a sentinel health event, indicating an inadequate prevention measure in specific regions.

The limitations of this study are the reader variability between the films, the initial film that was interpreted by the physician and the second film that was interpreted was not by the same physician, and these interpretations were separated by more than five years. And as with many of the studies, because as Mr. Watson indicated, because of poor participation we could have selection bias here. We only had about 31 percent of the miners participated, and whether these rapid progressers are more likely to participate or less likely to participate is not known. So it's actually speculation as to which way that bias might be, I'm sure everyone could have some thoughts on that.

Equally important is there are no exposure response relationships in this study so it's not useful in determining safe exposure levels. This study could still be improved or could have been at the time by having the readings of the X-rays redone by the same readers blinded as to whether they were coal workers or not, and then also doing it for both the cases and controls and then cumulative exposures or other exposure metrics and then looking for differences between cases and controls.

This next slide reports a study by Laney and Attfield in 2010. This figure you see here is constructed by Dr. Gamble from data in the study. This particular figure is not a part of the study but it shows a prevalence of radiographs with progressive massive fibrosis. As Dr. Wagner said, this is when small lesions coalesce, you've got a really serious disease, and you can have certainly symptomatology and pulmonary function loss.

But what he did is he separated these small mines out from the larger mines. So this analysis included 145,000 miners with X-rays taken in a 39-year period with the size and location of mine, size being the workforce and the location in mine, and then the prevalence of coal worker's pneumoconiosis was higher among the larger mines in the 1970s, something you probably wouldn't have thought.

And there's a similar prevalence in the 1980s, but it changed dramatically in the 1990s and 2000s when CWP became increasingly higher in these small mines. And if you were to adjust for age, the miners from the small mines were five times more likely to have PMF than the larger mines. And it's hard to see I know, but there's an upside down triangle curve here which is the large mines, a dotted curve which is all mines, and then the red triangle is small mines.

So you can see that the larger mines were slightly higher risk of PMF in this 1970 period. They really came together in the 1980s. But then in the 1990s and 2000 this small mine effect really began to drive things, and these are small mines, these are all mines, and these are the large mines. So no doubt this all mines curve is being dragged up by these few small mines.

So the reasons for this prevalence shift from large to small mines cannot be assessed in the study of course. Small mines may have higher actual dust levels. Some MSHA data looking at specter data indicates that that might be the case. And at the large mines there was not found to be the same or as strong of a difference between the MSHA data and the operator data. So it was found that the maximum spread MSHA samples were about two fold greater than the operator samples, and that's for the small mines again.

This next study is of Laney, Petsonk, and Attfield, pneumoconiosis among underground coal miners, is silicosis becoming more frequent? And I think they looked at the correct problem here. This is a study shows CWP commonly does not progress rapidly and requires a longer latency period. As I mentioned earlier silicosis generally is considered to have a latency of greater than 10 years. I think many would agree coal worker's pneumoconiosis more likely to be 15 or even 20 or more years for development.

And on the other hand the silicosis has these characteristics at high concentrations well above the quartz standard, and I think that's what we've been seeing. The R type opacities that NIOSH has considered being consistent with silicosis are plausible indicators of excessive quartz exposure, and this is based on correlations between radiology studies and actual autopsy findings, this notice of R type opacities.

And in this chart this red line are R type opacities in Kentucky, Virginia, and West Virginia for PMF. This middle line is -- I'm sorry. This is for coal worker's pneumoconiosis. This next line again is Kentucky, West Virginia, and Virginia, and this is PMF. And then for the mines outside of these, again this is a figure that Dr. Gamble plotted, but when you separate these small mines, or these mines, I'm sorry, these mines in this region, you see that actually PMF may have increased slightly, I doubt if there's statistical significance here, but PMF actually declined.

So again it's this regional effect that is having a lot to do with what are being reported as this rapidly progressive CWP and it probably is not a nationwide occurrence. So this study was of 90,000 radiographs. There were 321 X-ray readings showing R type opacities. Again SAR prevalence was 7.6 fold increase in R type lesions in the period 2000 to 2008 compared to the '80s, and for the rest of the U.S. there was no trend for R type opacities increase and slight downward trend for PMF.

So in conclusion for the RPCWP studies, the greatest severity of RPCWP were more characteristic of silicosis than CWP, are associated with R type opacities on the chest radiograph. There's a strong geographic clustering of RPCWP in the SAR. For the SAR prevalence of both R type opacities and PMF increased each decade. There's an effect shown of increased risk noted in small mines.

And the evidence is convincing that increased quartz exposure is an important if not the explanatory factor in these rapidly progressing cases of CWP. And essentially these cases of silicosis likely have been misdiagnoses, or I should say misidentified because you don't diagnose CWP from a chest film alone, as CWP. And this experienced of course because of lack of exposure response and other readings which I've pointed out provides no support for reducing the coal mine dust standard. And with that I'll turn it over to my colleague Dr. Gamble.

DR. GAMBLE: Thank you. What I want to do actually is to look at exposure response and its relationship to the coal rank, and then also look at bias and confounding. And these all go together because you can see them all occurring in some of the same studies, and that's what I'll be trying to do. In order to do that, for U.S. studies there is basically three studies that are based on U.S. data. Two of them are morbidity studies, that means radiographic CWP.

One is the Attfield and Morring of 1992 which is based on only pre-1970 miners, so it's before the standard came into effect. The other is Attfield and Seixas in 1995 which is study of coal miners in round 1 and 2 and 4. And then there's one mortality study with exposure response analysis and that's Attfield and Kuempel in 2008. And these three studies have problems of bias from exposure misclassification, that's true for all three of them.

They have problems of bias from low participation, and that's with the 1995 study. Problems with low participation and how it biases the study is anybody's guess, we don't know. And then there's another factor that we should consider in the morbidity studies at least, and that is that what is the background prevalence for a nonexposed worker or nonexposed person, particularly as the age increases?

Okay, so what I want to look then is at exposure response, coal rank, and bias. And what we find, these are the conclusions and I'll try to show you the data that supports that. There are clear exposure response associations between coal worker's pneumoconiosis and coal mine dust, it's quite clear. The current data suggests that there is no excess coal worker's pneumoconiosis at exposures below the current standard for coal ranks 1 and 3, the low ranked coals.

It's the high ranked coals that appear to be showing the effect in the current data that we have. If you adjust for the bias in these exposure estimates, it appears that you would not only increase, you would reduce the risks because of overestimates of exposure in part -- underestimates of exposure, and I'll try to show that as well.

Okay, let's take the first issue of background prevalence. And the background prevalence should be taken into account when assessing risk of increased radiographic CWP. NIOSH says in one of their studies that 5 percent may be an appropriate standard for a background prevalence. And the problem is that these are not the best data in the world, mostly because most of the time they're from other studies. It would have helped if prevalence data had been taken at the time of the study so everything was basically the same, the time frame, the readers, and all of that, to provide you a control background prevalence of radiographic changes.

And this is the evidence that we have on background prevalence in some of these older unexposed workers. The original reference to and discussion of this was in Attfield and Seixas 1995, and they had a group of blue collar workers from the Castellon study, these were blue collar workers and they had a subgroup that were about on average 58 years of age, so they were elderly and they are around the 50s and 60s, and they had a 1.4 percent background prevalence with some variability and if you took the upper limit of that variability it comes out to about 3 percent.

Then Attfield and Seixas had predicted values of CWP, and at zero exposure they predicted the background prevalence would be 5 percent. Attfield and Morring 1992 did the same thing, and their predicted prevalence at zero exposure was 5.5 percent. And then we have a study by Mieredell -- oh I'm sorry, this is another study in England where they looked at both small and irregular and there are actually a fair number of irregular opacities in coal miners. And these were for 60-year-olds and they found a prevalence, background prevalence of about 7 and a half percent.

And then there's a meta, call it a meta-analysis, it looked at about 10 different studies in the literature, and this is 1970, so. And they found that there was in the E.U. background prevalence was almost 12 percent and in North America it was, sorry, in North America it was about 2.3 percent, so on average somewhere about 5 percent with confidence intervals of about 3 to 8.

So we're going to take base in large part on the suggestion of NIOSH in their discussion that the background prevalence rate will be from age and non-occupational causes is about 5 percent. And I'll be showing you that at least on some of the exposure response slides so we can take that into account when we try to interpret these data. So now let's look at the exposure misclassification bias.

And this is Attfield and Morring, this is incorrect, it's Attfield and Morring quote, says that any underestimation or overestimation in the MSHA data for exposure would have little effect on the pre-1970 portions of the exposure. And that's what we're really going to be looking at because two of these studies is only based on pre-1970 exposure data. And we suggest and I think the data, I guess I should say the data suggest that the bias actually can have a large effect on exposure estimates.

Okay, so the exposure bias, and say that the pre-1970 exposure estimates are biased to produce a spuriously steep slope and to overestimate risk. If there's an upward bias in the exposure estimates and if they were to be adjusted for there would probably be no increased CWP occurring below the current standard for any rank of coal, and this is based only on workers exposed prior to 1970. Let's see if we can show that.

The NIOSH method for estimating for these pre-1970 exposures, the data that they have is the work histories from the questionnaires during the first round of the national study of CWP. Then we have some exposure data from BOM, Bureau of Mines, sampling that was done from 1968 to '69 prior to any standard or any, and this was done at 29 large mines, 17 of those mines were part of the national study of coal worker's pneumoconiosis, they did some small mines and they took most of their samples from the face, they took basically over ten shifts, they had no above-ground samples.

The other database that we're using is the 1970 to '72 MSHA compliance data from operators. And this and NIOSH, what they're trying to do now is try to take the, what they're basically doing is taking this MSHA data and then finding what the ratio is to the BOM data, 1968 to '69, which appears to be the gold standard in the sense that it's more like any exposures that they would take post 1970 when the standards were in place, and then apply them to the work histories to get a cumulative exposure.

The other thing that they did is the MSHA jobs, apparently the MSHA jobs and the jobs on the work history must have been different in some way that I haven't been able to figure out, but they combined these, they combined these MSHA jobs to the smaller Lainhart job groups, so they went from 25 jobs in MSHA down to 12 jobs, and you can see that in one of the figures I show. Well, you can almost see it.

Okay, so let me just go back a minute to, what they're doing here is that they're taking the mean values from these operators by job. So they have a mean value for a continuous miner operator and then they have a mean value for a continuous operator for the BOM studies. So it, I believe in the BOM the value for a continuous mine operator was about 8.8 milligrams per cubic meter. The MSHA compliance data was about I think it was something like 5 milligrams per cubic meter.

So then they took the ratio of the BOM data and the ratio of the MSHA data to get a ratio. And that ratio they could then multiply times the MSHA compliance data to in a sense replicate what the BOM data did. I'm not sure why they did that but they give reasons that most of which I don't understand. But that's what the process is.

Now the other thing that they did, instead of using the individual data, individual ratios of BOM to MSHA data, they took an average. And the average was 2.3, and the ranges of those ratios ranged from .4 to 8.8. So what I want to show you here on this slide are these ratios. And so if we look at the low exposure end, what's happening, this is below 4 milligrams per cubic meter. This is the average ratio of the BOM data to the MSHA data.

So they say, they multiply the MSHA compliance data average times 2.3 to represent the BOM, the pre-1970 average for these jobs. So down here we have the ratio is less. That's saying that the MSHA data is underestimating exposures that were represented by the BOM data. And I can't read that but this is less, it's a milligram difference in some cases.

This is the high exposure groups. This is greater than 4 milligrams, and you can get some idea of the exposures. If this is between, you know, 8 and 9 milligrams per cubic meter so these exposures are pretty high. And these are, the ratios are greater, so that in fact, greater than that 2.3, so in fact what is happening is that these exposures are being underestimated by NIOSH.

Now the effect of this overestimation of exposure at the low exposures means that you're underestimating the risk. So if you apply this to your exposure response graph it's going to push the lower end of the graph upward to adjust for that bias. At the high exposure end of your graph, because you're underestimating exposures you're overestimating risks. So to adjust for that it pulls the graph down.

And so in effect if you adjust for these biases you flatten out any exposure response curve because you're just tilting it the whole curve to the right to some extent. And this shows you that if you, this is the low exposure jobs, these are the NIOSH values here, these are the BOM values here, and you're showing that the NIOSH values in large part are greater than the BOM, the gold standard. And at the high end of the exposure, and also that the number of jobs actually is less here so that some of these jobs you have the same, you have different, some of the BOM jobs actually go to one of the same NIOSH jobs.

And here you have just the opposite where now NIOSH is underestimating exposures and these are basically exposures from 4 to almost 9 milligrams per cubic meter. Now if we go to the measure of exposure is cumulative exposure, which is milligrams per cubic meter year. So how do you translate that difference in these average exposures for job into a cumulative exposure?

Well they've used the 2.3 conversion factor. And if you, you can use their calculations to come up with what their estimate of the pre-1970 exposure job would be, and then if you take the average of all that it comes out to be there's an average difference of 1.32 milligrams per cubic meter on the high exposure jobs, and the tenure in that cohort is 21 years. So if you multiply 21 years times this difference between the two estimates of exposure you come out to about 30 milligrams per cubic meter difference, where you're underestimating the risk, their exposure, by about, just for convenience 30 milligrams per cubic meter.

So that means you're overestimating the risks, and then we can look at these exposure response curves that we have and try to adjust for that in a crude way. If a low exposure works just the opposite, the numbers are about the same, it's about 30 milligrams per cubic meter overestimated exposures which would then elevate your risk.

And I'll come back, we'll come back -- okay, so these two points, background prevalence and exposure estimation bias we'll come back to when we look at the exposure response curves because we'll have all of those factors in there. There's another factor that we want to look at, and that is has to do with coal rank. And I think we already went through this, that actually there are clear exposure response relationships between CWP and coal mine dust and we'll look at the adjustments and what effects they may have.

Now, okay there we go. So we'll look first at morbidity. First study we'll look at is Attfield and Morring 1992. This is only the first round of the national coal worker's pneumoconiosis study. In 1969 to '71 there are 9,000 workers, there's 90 percent participation, so there's not a low participation problem in this group. But all of the exposures are pre-1970 so we do have a problem, potential problem with figuring out what those exposures are.

They assume no change in exposures from about 1920 to 1970 over this period, nearly 10 percent began working before 1930s and about 85 percent have average dust exposures that were greater than 2 milligrams per cubic meter. This is the distribution that they provided in their study. And this is the exposure response trends from these data, I've graphed them from the data, and stratified by coal rank.

So this is cumulative exposure in milligrams per cubic meter years along the X axis, and this is the prevalence of CWP category 2. And so the one on the left, the one showing the clearest association with coal mine dust is this blue one, or whatever it is, the dark one, this is rank 1, this is anthracite. Oh, the others were things I need to show you.

This vertical curve here is at 80 milligrams per cubic meter, this is the standard or the cumulative standard. If you multiply 2 milligrams per cubic meter times 40 years you come out with 80 milligrams per cubic meter years. So that's what we're looking at. Anything to the right of this line is exposures above the standard, anything left to this line is basically below the standard. And then we have a 5 percent prevalence so the background prevalence is 5 percent. So if we want to see any effect --

DR. WAGNER: Actually, John, the studies

that you showed with the background prevalence were looking at CWP 1 and this is CWP 1 plus --

DR. GAMBLE: Oh, 1 plus.

DR. WAGNER: CWP 1 plus, and this is CWP 2 plus, so that would not be the same background prevalence, would it?

DR. GAMBLE: We don't know what it is.

DR. WAGNER: Okay.

DR. GAMBLE: We're just using the NIOSH figures --

DR. WAGNER: You're asserting 5 percent on 2 plus even though it was what you showed us was 1 plus.

DR. GAMBLE: That's right. The data are scarce here. We're using basically what NIOSH suggested as 5 percent is what they used.

DR. WAGNER: They didn't use 5 percent for 2 plus, they used it for 1 plus I believe is what you showed us.

DR. GAMBLE: And they talked about in the general sense of background prevalence, but that's a good point and I don't know for sure where that line should go.

DR. WAGNER: Okay.

DR. GAMBLE: We're just using what NIOSH suggested we, as I interpreted what NIOSH suggested we use. But you're quite right. But for now let's see what happens. So this is the background prevalence but even, so this is, using, if it were a different prevalence then this line would go down.

DR. WAGNER: You have to speak into the --

DR. GAMBLE: So if you used a different prevalence this background prevalence would change. But if we're going to look at an effect of exposure below the standard we have to look down here in this upper left quadrant. And here you see that the effects are only occurring in rank 1 and 2. There's no effect in rank 3, 4, and 5. And all of these basically these are people that I think close to 85 percent have exposures greater than the current standard.

So this is the finding from -- now if we then, we now want to look at the effect of that bias of exposure misclassification where we said there was that they had overestimated risk by about 30 milligrams per cubic meter years. Okay, the only thing I can do, because I can't adjust that in the graphs that they provided, the only thing I can show that, if I go from 80 down to 50, that's a difference of 30 milligrams per cubic meter, and when you do that if the 5 percent background prevalence is correct there's no excess under the current standard.

And we haven't accounted for this shifting of the curve upward because of the underestimation of risk which would need to be, so the effect probably is greater than we're actually showing here, assuming this estimated bias is correct. So these data do not provide any evidence, the problem with these is that these exposure estimates are based on pre-1970 levels which are very high and which we don't have a lot of data on. So it would help if we actually could get a -- that was consistent of workers after 1970 when the new standards came into effect.

Then the next study is Attfield and Seixas is the only one 1995, this is includes workers in rounds 1, 2, and 4. There were 7,000 miners eligible and the final cohort consisted of about 3,000, so they actually had 58 percent participation in what they had sought out to get, tried to get. So some of this is due to low participation particularly in rounds 2 and 4, which were, and then as a result the cohort may not be representative.

And these are the data from this study. Same as before, cumulative exposure on the X axis, prevalence of CWP category 2, and here you see, you know, here's the current standard. This is PMF and this is CWP 2 and these are high ranked coal, that's the only place where you see anything happening. These are low ranked coals, nothing's happening either for CWP category 2 or PMF.

We can't take that exposure bias into effect because a lot of these exposures are post 1970, so only about perhaps somewhere between a quarter and a half of these are affected by these pre-1970 exposures. So tend to shove the bias here, tend to shove these results a little bit to the left but don't know how much. So we conclude from this that -- oh, that's the morbidity and I want to go to mortality.

And this is nonmalignant respiratory diseases coal worker's pneumoconiosis mortality, we conclude that there is an increase of both mortality elevated at exposures above the current standard and that the exposure may come mainly from high ranked coal and not from basically anthracite coal and that but we need to do an exposure response analysis with low ranked coal to figure out if anything is going on there.

These are the data that shows you coal worker's pneumoconiosis mortality, nonmalignant respiratory disease mortality. This is an SMR of two, and this is the exposure is at 80, so their exposures are occurring the effects are occurring below the exposures. If we take out that bias estimate then so we look at the now nonmalignant respiratory disease shows no excess below the current standard. This is a SMR of 1 and the coal worker's pneumoconiosis at that adjusted exposure is less than 2.

And the other thing we can see is that this is entirely confined at least in terms of the SMRs to the high ranked coal, this is anthracite. These are bituminous subbituminous coals, there's nothing going on in terms of nonmalignant respiratory disease. So it appears to be localized in the high ranked coal or the anthracite.

Okay, what's the weight of evidence and how does it relate to the coal dust standard? The evidence I just showed you I think, the evidence which I would think MSHA would rely on, when viewed with silica and coal rank, coal rank are causative factors and they demonstrate that the current standard is adequate. CWP is associated with high coal mine dust exposure in high ranking coals.

When you adjust the bias to background prevalence, and there may be a point as to, point of discussion as to what that should be, but it appears that exposure estimates and low participation rates may cause apparent effects that you see occurring below the standard and we need to take care of these issues in order to be able to say that anything is happening below the current standard. Thank you.

DR. WAGNER: Is Bruce still with us?

MR. GLENN: He stepped out for a minute.

DR. WAGNER: Okay, does the NMA have any other people for this 2-hour panel that you want to have speak?

MR. GLENN: No, I think this is the end of the panel.

DR. WAGNER: Okay, Bruce, you have no more speakers?

MR. WATZMAN: No.

DR. WAGNER: Okay, do you want to come join the panel? And I think, Dr. Cox, also if you want to come up so that we can begin to explore some of the issues. Before I get started I want to thank all the speakers and particularly all of you who either brought original data or brought your skills to bear on the reevaluation of other data that's in the record, we appreciate the specificity of both your analyses, your conclusions, and your recommendations. I'm going to turn first to the folks on the panel, I guess George just stepped out briefly. I expect because of the number of speakers we may have multiple questions by each of the panelists and we'll try and do the best that we can in being as efficient as we can in identifying the questions. So I'm going to start first with Bob Thaxton.

MR. THAXTON: And as Dr. Wagner said it's going to be difficult to ask the questions because so many of you spoke one after the other without giving us the opportunity to ask you questions as you made your presentations, and a lot of the material needs to be looked at. Since we didn't have it in front of us it makes it more difficult to follow and actually comment or ask questions or clarify some of the items that you brought up so it will probably have to be something that will have to be done after we receive your presentations to where we can actually take a look at them.

There are just a couple of things that stand out that I took note of that I'd like to try to address. First with Bruce, you made a comment concerning the description of the CPDM use and sampling on a long wall, and you specifically said you have this situation where in the future we may be running a long wall by remote control and actually being required to put a CPDM there with no people working there. I'm not sure where you obtained or come to that conclusion because the regulation specifically spells out that we are sampling designated occupations or ODOs, other designated occupations. If there is no occupation working there I'm not sure how you came up with that we would be requiring a CPDM to be located somewhere where nobody's working.

MR. WATZMAN: Bob, our view is that the way the rule is structured, and maybe the example could have been cast in a different way, our principal view of the rule concerned is that the way the rule is structured, the way the rule envisions the application of the CPDM it misses the mark. This is the first time in history in the sampling program as we know it that we're going to have the opportunity to sample individuals for them to know what their exposures are so that intervention actions can be taken during the shift.

To envision a protocol that would require the changing out of a sampler where you'll have multiple individuals performing the same job function absolutely eviscerates the power and the utility of this tool. So maybe my example was misplaced and if it was I will reconsider it and accept your comment.

But I think, you know, it goes more generally to the question of what is the tool, how was it designed, what is the power and the utility of the tool to protect miners' health, and is the rule structured in a manner that allows operators and miners to maximize that? And we think it's not.

MR. THAXTON: Okay. Given then that your discussion just now as to how you see the CPDM being used, then is it your preference then from your comments that the unit should be assigned to individual miners and kept with that individual miner for the entire working shift?

MR. WATZMAN: Yes. You know, and it goes back, there's the bigger issue that is involved in this, and that's the issue of administrative controls to protect miners from overexposures, something that the rule allows for a very limited basis but is not considered as a part of standard industrial hygiene practice and its routine use. I mean if as we believe, and we will be providing suggestions and alternative language, I can tell you that from the industry's perspective we think that the whole suite of standard industrial hygiene practice should be part of this to better protect miners from overexposures.

Principally engineering controls is the

front line means to control, administrative controls and personal protective equipment also all has to be part of the suite of tools, so that if you had an allowance and an acceptance for administrative controls and you were changing people out for a in the DO, then both of those individuals would wear a CPDM or whatever the sampling device is so that you know that person's exposure during their work shift rather than that work position's exposure during that work shift. Because we're concerned about the exposure to the individual, and if an individual is working five hours in the DO out of a 10-hour shift then are we really characterizing it correctly?

MR. THAXTON: That is one of the areas that we have asked for a lot of comment on from the industry as, looking at we do enforce an environmental standard, we consider the environment of the mine being monitored, not the individuals. How you use your individuals, still they all work and travel in the same environments so we're monitoring the environment. We have asked for your comments in relation to collecting samples and doing it from a personal standpoint versus the environmental.

My question still though for you in relation to what you've said about the sampling then, are you proposing and how are you going to be submitting information to us in your written responses that would detail how you would expect individual miners or expected to be individual miners to wear a CPDM, how many of them would have to wear CPDMs in order to characterize their exposures adequately to ensure that each and every miner is protected on each and every shift?

MR. WATZMAN: Suffice to say, Bob, the simple answer is yes, we'll provide to you by the end of the comment period a robust, complete alternative that we think better identifies that is an alternative based upon what we think is the real problem that exists currently in terms of increases as you characterize it in coal worker's pneumoconiosis across the industry, something that quite honestly we don't share, we don't share that view. So we'll present a proposal, an alternative to you that's based on our characterization, our recognition, our understanding of what the problem is today and the required response.

MR. THAXTON: Okay, thank you. Do you want to stick with Bruce or do you want us to go down the line?

MR. WATZMAN: No, let somebody else have

some fun.

DR. WAGNER: Well I think it might be just as easy to go one at a time since we probably took our notes that way. George?

MR. NIEWIADOMSKI: Bruce, you had in your comments you indicated that the proposed rule would not improve miners' health nor would it restore confidence in the program. Can you elaborate on what you meant by that?

MR. WATZMAN: Well I think the confidence comes into play, George, in terms of the complexity and the lack of understanding of the rule. And this is not something that's unique to the industry. You had testimony in other hearings that preceded this one where other witnesses both representing operators and miners alike talked about the complexity of this rule and all that goes into an understanding of it. This isn't a simple rule to understand.

You know, when you talk about the formulas and the equivalent concentration values that are constructed in this rule, this is very complex. It's complex both in terms of, you know, the foundation upon which it was built, and complex in terms of how it's going to be managed at the operations. You know, Mark and Heath talked to you and there are other operators who I'm sure could go into chapter and verse in their view in how they're going to manage this program at the mines both in terms of the technologic limitations and the economic costs of the proposal.

There is in our estimation there's just nothing simple about this rule. And, you know, hopefully when we come back to you we're going to come back to you with something that's cleaner, more easily understood by everybody, and is better responsive to, you know, what we think is an identifiable problem but not a problem that exists across the entirety of the industry.

MR. NIEWIADOMSKI: You also had mentioned a recommendation that was made by Dennis O'Dell in previous meetings that the CPDMs should be used to collect exposure data to determine what miners are being exposed to, and apparently you support that recommendation, right?

MR. WATZMAN: Yeah, today we think the CPDM is a fabulous powerful engineering tool.

MR. NIEWIADOMSKI: Now --

MR. WATZMAN: You know, and we think that there is, while it's I think everybody on the panel and in the industry supports the continued development of it, I think that there are people as reflected in some of the testimony who have concerns about the reliability and the precision of the device today and whether it is ready to be used as a compliance tool. But in the interim it is a powerful tool that we can use and continue to use as it's being used today to educate miners as to their dust exposures so they can change their work practices, their work positions, so that they can intervene on their own behalf to reduce their exposures.

MR. NIEWIADOMSKI: I think you also had mentioned something, alluded a fact that based on the reported information that we're not really sure how accurate that PDM is, that the measurements, the accuracy of those measurements, whether or not they're actually accurate, you made a comment to that, correct?

MR. WATZMAN: Well, what I was doing, George, quite honestly was a lead-in to the work that, you know, what I think is the work, the beneficial, worthwhile, and professional work that's been done by the folks at Alliance. You know, there are differences of opinion. I know that there has been extensive work done by the folks at NIOSH relative to the accuracy and precision. You know, there are differences of opinion as to those determinants.

MR. NIEWIADOMSKI: So basically what you're saying, and it may take issue with NIOSH's findings that the CPDM meets the NIOSH accuracy criteria, is an accurate device?

MR. WATZMAN: I think that what I'm saying is that we all need to know more about it, there's more work that needs to be done. I'm not saying throw the baby out with the bath water, George. I think everybody recognizes that this is a quantum step forward as compared to the system that we've had in place today, but we need to make sure that it's right. We can't afford a failing system again. We've all suffered from the consequences of a failed system, most importantly the miners whose health is at risk here. So we just need to make sure that we're all on the same page and that we're all working off the same data, the same analysis, and that we're all in agreement. There's more work to be done.

MR. NIEWIADOMSKI: Well do you think we can agree upon when such a device would be ready for prime time?

MR. WATZMAN: George, when did we begin working on this? You know, this has been a long gestation period if you will. You know, we began with a machine mounted device that was the size of this table or thereabouts, and Craig was around then, never believing that we could get to the point where we are today. I can't predict, I mean I don't think anybody here can predict. What I can tell you is that the industry is committed to continue to work on this, to work with you, to work with NIOSH, to work with the miners, to work with whoever else wants to come to this party to make sure that we have a device that provides the confidence that we all so desperately need.

MR. NIEWIADOMSKI: Thanks, Bruce.

DR. WAGNER: Do you have anything for Bruce? Do you?

MR. WATZMAN: Okay, I'm out of here.

DR. WAGNER: Not quite yet.

MR. WATZMAN: Oh, I forgot, you still have to --

DR. WAGNER: I just first wanted to mention I think that you knew this but may have forgotten when you were asking for us to go through another Federal Register notice that our opening comments are posted along with each hearing transcript and so they're available fairly to anyone who wants to --

MR. WATZMAN: And I hope that they will be posted in a timely manner so we have time. We're still looking for some of the transcripts from some of the more recent hearings. And, you know, I understand things happen, Greg, and you know, we will review the transcripts as we've reviewed the transcripts for the hearings that have posted, and if that suffices I mean, you know, there are those who aren't in this room, you know, and aren't privy to the discussion here, and you know, all I'm saying is to ensure that the all of the stakeholders are aware of what you're soliciting, you know, the best way to go about it may be through a Federal Register notice because I can guarantee you people know of the Federal Register and follow it.

DR. WAGNER: Thank you. I was confused, you were talking about exclusion of some workers from some provisions of the proposal and I just wanted to get clarity as to who you didn't want to have excluded from what provisions?

MR. WATZMAN: We don't want anyone excluded from the medical surveillance program.

DR. WAGNER: Okay.

MR. WATZMAN: The mandatory X-ray surveillance program, and if I have read that wrong then please correct my misunderstanding of the rule. The industry has long advocated and will always advocate for inclusion of all workers in a mandatory X-ray surveillance program. They, their personal healthcare providers, and the industry need to know when a miner is experiencing lung disease, hopefully at its earliest stages if that's the case so we can take intervention measures.

In the absence of having this information what we're going to see are X-rays as you showed where you have a miner who in a period of, you know, too short a period has advanced as we saw when we visited NIOSH from zero, from no lung disease to 1/1 in a period of five years. I mean it so happened that that miner, you know, availed himself of participation in a voluntary program. How many are out there who aren't availing themselves of participation in a voluntary program and are we doing a disservice to those individuals by not requiring inclusion in a mandatory surveillance program?

DR. WAGNER: Okay, so your written comments, now I understand what you're saying, make the medical surveillance mandatory?

MR. WATZMAN: Correct. Well our written comments aren't done but, they will.

DR. WAGNER: Good. And what are, do you have ideas about what the consequences of showing early stage lung disease, lung impairment through spirometry, lung disease through X-rays, what the consequences of that should be?

MR. WATZMAN: Well we're thinking about that quite honestly. I think in our view the Part 90 program has been a dismal failure and we need to do better. I understand the reason why some individuals when they receive a Part 90 letter opt not to exercise that. But is that really in the best interest of that individual? Is it possible that we set up and come up with a scheme where at certain levels it's an option but at other levels it becomes a mandatory requirement so we can move that person to a less dusty environment?

You know, as I say, I understand why we got to where we are today but I also don't believe that where we are today should be the model that we follow going forward. So that's something that we're working on, we'll continue to work on, hopefully come up with an approach that everybody agrees is in the best interest of the miners' health while protecting their rights, because it has to be a consideration of both elements.

DR. WAGNER: All right, thank you, we'll look forward to that. And also as you're thinking about that, one of the issues that's been brought up as a disincentive to for individuals to identify themselves as Part 90 miners is that sometimes the physical demands at a job with lower dust may exceed the physical demands of a higher dust job and people developing lung disease would prefer not to undergo the increased physical demands. And so as you're thinking about the total scheme I hope that you address that as well.

MR. WATZMAN: We will.

DR. WAGNER: Great, thank you. So you had mentioned silicosis is a significant problem I think as an introduction to some of the other speakers and I know that Bob Glenn emphasized silica as a problem. What do you think should be done about this problem that you've identified?

MR. WATZMAN: You know, I'm not sure, is my quick off-the-cuff answer. I mean I think we have to use all the tools that are available to us to protect miners from overexposure to silica. You know, we have to examine whether the suite of engineering controls are being used and optimized. But beyond that I think we have to recognize that where we cannot achieve compliance through mere utilization of engineering controls then we have to consider honestly, you know, the use of nontraditional controls.

If ultimately our objective to protect miners from overexposure I think there is a concern on our part that we aren't going to get there looking solely at what has been our traditional controls of air and water. There are limitations to the amount of air and water that you can push through a section, and especially when we're talking about if your rule is finalized at a 1-milligram standard and then the reduced standards that would result from that.

We're talking about levels that are amazingly low, you know, when we looked at it, and as I say we're still doing analysis of this. But I forget the exact numbers but, you know, it was an inordinate percentage of mines that would be at a standard of below .5 and a shocking percentage of mines that would have to meet a standard of below .2. You know, on the low end you have .1 which is a low weight sample and can be discarded, at the upper end you're going to have a .2 which is going to be the compliance determination on a single shift determination if the rule is finalized, I mean that's a pretty narrow band to try to zero in on with traditional engineering controls.

So, you know, do I have an answer to offer to you now as to what is the silver bullet, Greg? No I don't have an answer other than to say that we need to think differently than we've thought in the past if ultimately our objective is to protect miners' health. We don't believe we're going to get there solely through the use of traditional engineering controls as has been the practice in the past, especially if we're making compliance determinations on the basis of a single sample.

DR. WAGNER: Thank you. You made a -- I think I'm going to just, any other questions for Bruce at this point? We may circle back as, you know, other people come over.

MR. WATZMAN: Don't go away.

DR. WAGNER: Yes, sorry, it's not lunch break for you yet. So I'm going to again, well I think I'll start with George this time for Mark Watson and Heath Lovell.

MR. NIEWIADOMSKI: Just a couple questions for you, Mark. I know you had, certainly showed quite a few statistics, okay, I'm looking at the MSHA database. And of course what you did was you made some, well the comparisons you made is that if in fact we had a 1-milligram standards in effect this is the number of noncompliance determinations would be made, or the number of exceedances , okay, the number of, but that's assuming that basically you're looking at existing data and of course those applicable standards could have ranged anywhere from less than 1 to 2 milligrams.

And you're assuming that if we apply, you're applying the 1-milligram standard test to this to the data that was collected and under different standards, okay? And plus the question is you're also looking at the data if it's operating compliance likewise MSHA compliance determinations based on average, and if current operator collects bimonthly samples he has five samples.

You know, there are excursions, okay, there are going to be samples above the standard and below it and you average them, okay, and you're still you could be at below the applicable standard, okay? However, you would have individual samples significantly above the standard. So you're actually looking at that data basically and applying this new test to data that was collected under different circumstances, specifically different standards, correct? I mean that's what you've looked at?

MR. WATSON: Yeah, that's correct.

MR. NIEWIADOMSKI: So you're assuming that basically if you apply this new test to this existing data this would be the frequency of exceedances.

MR. WATSON: That's correct.

MR. NIEWIADOMSKI: Which is not, and the problem with that is that's looking at existing data. But if you in fact were required to comply with a reduced dust standard, you know, the incentive is to be in compliance so it certainly would have been a different test. Did you look at specifically a better assessment of whether or not, you know, you would issue X number of citations is to look at only those particular for example entities, MMUs, that are on the reduced dust standard of 1 or less to see how well they performed?

MR. WATSON: We haven't gotten into the detail looking at the reduced standard MMUs.

MR. NIEWIADOMSKI: Okay, because that's what we did in our analysis, and I believe it's certainly in the feasibility, where we looked at, we didn't look at averaging, okay, although we presented that information on averages, okay here's the mean concentrations, the average differences. But we also looked at individual sample results, of those how many individual samples were at 1 or greater than 1.

But then we also had a subset where we in fact looked at to address the issue of feasibility, okay, technical feasibility. Well let's look at those particular entities that are required to comply with lowered standards of 1 or less and look at the results of individual samples. And the fact is there's a majority of those, significant percentage of those certainly were below the applicable standard of 1 or less. Are you looking at that particular subset?

MR. WATSON: When we're looking at the actual data we're looking at the entire data set. And I don't think that there's a better way to project future results than looking at the entire data set, the real data. I understand that under a different compliance scenario things might be a little bit different, but the reality is MMUs that were operating under 2-milligram standard, we're not trying, we're not targeting a 1.9 or a 1.95, we're trying to reduce our dust levels as best as possible.

As Heath mentioned, you know, we have 40 PDMs, we actually have 60, I mean we're using the tools and I think our results over the last couple of decades and particularly since 2006 has shown that our industry is implementing the best available tools to reduce concentrations. So I mean it's natural to think that on a going forward basis that, you know, we can continue to improve because we are trending downward and we expect that we'll be able to continue to improve.

But to make this massive step change and, you know, the fact that you say that you've looked at single shift levels individual MMUs, to say that's one thing, but MSHA has also made the statement repeatedly that based on the fact that the average concentration is below 1 milligram that in fact 70 to 80 percent of the industry is already in compliance with this rule and that it won't be a major impact to the industry to try to comply with this rule and that's not true.

MR. NIEWIADOMSKI: What we have said is though, I mean we're comparing what the mean concentrations are, and that's true what you had mentioned before that since 1983 the mean concentration of all designated occupation samples is less than 1. In fact in 2010 I think it's approaching .7, okay? Now having said that, we're looking at individual results too, okay? And given if your average concentration is below 1 you're going to have a significant proportion of samples that are below 1, okay? Individual samples.

Which tells us, okay, and we've adjusted those for full shift, for full production, and those adjusted concentrations indicate that three quarters of them for DOs are at or below 1 milligram, which indicates that the industry, okay, based on the compliance data that's being supplied is capable of meeting the 1-milligram, is meeting the 1-milligram standard right now. That's all we're saying. Now unless you're going to indicate that probably maybe that data is not representative, but that's all we have to look at, and those have been adjusted, and that's the basis of technical feasibility is made on those adjusted data.

MR. WATSON: I wonder why you're assuming that the industry is only doing what's necessary to comply with the standard and not reduce the dust as low as possible. I think the proof back to why the average is so low to begin with is proof that the industry is trying to reduce all dust, that we're trying to get it as low as we can, not just get it below the 2.0 standard. So I think that's why what we did was a fair comparison because we believe most operators and miners are trying to get the dust as low as possible. Therefore you can't just assume because they got below 2, well they're just doing the standard so if the standard lowers they must be able to do that too.

MR. NIEWIADOMSKI: No, that's not what I'm saying. I'm basically what I'm saying is this. The question is being posed, is it technically feasible to meet the proposed standard. Based on the compliance data, the compliance data is indicating you've done a marvelous job, okay? It's been on the average it's been below 1 since 1983, okay? Now if you look at individual sample results even though all determination's based on averaging, okay, of five samples, even under averaging you have a significant proportion of those samples are below the, significantly below 1 milligram, okay?

And that is certainly the basis, that data suggests, okay, that the industry is capable of meeting 1 milligram even though they don't have to because their standards are up to 2 milligrams. And that basically shows that the industry is capable of complying with 1 milligrams, that's all that data is suggesting to us.

MR. WATSON: I mean you're suggesting that 75 percent of the samples are in compliance on individual single shift samples. I think the number is actually more like 65 for designated occupations if you exclude the low weight gain, but you know, let's meet in the middle and call it 70, it doesn't really matter. But the 30 percent noncompliance samples, when you multiply that by 500,000 samples a year, you get a massive number of highly punitive citations, and the fact of the matter is those single shift measurements that were taken are highly variable, which we showed with our PDM data. So I mean you're averaging samples is the only way to get any accuracy out of the instrumentation that we're using to measure the dust in the first place, and the single shift sample is not feasible.

MR. NIEWIADOMSKI: Okay. Would you, since, and this is not, certainly that has been expressed in other meetings about citing on single samples, do you have a position on what the maximum excursions you would permit if in fact MSHA was not citing on a single sample? Are there any limits on daily exposures? Is there a maximum limit that you would want MSHA to permit?

MR. WATSON: If you look at some of the data that we presented, I mean you can be over 100 percent off in the variance between PDM and a dust pump, a gravimetric sampling device. At this point, you know, we don't have a lot of confidence in the single shift sample just because the instrumentation we don't have a lot of confidence that it's accurate and because it is in fact somewhat of a bell curve you need a significantly larger sample set and be able to average that in order to have any accuracy whatsoever.

MR. NIEWIADOMSKI: I have one final question --

MR. LOVELL: I'd like to answer that. I think that's probably a question more applicable to Dr. Cox or some of his colleagues to where, you know, he's presented that a lot of the data suggests that CWP doesn't occur from an overexposure in one hour shift or one 8 hours or one week, that it's something that happens over months and over years. So I don't know that we're in a position to answer that question of what the magic number is for an 8-hour shift. I think others may be in a better position than us.

MR. NIEWIADOMSKI: Which is true, I mean it's a cumulative effect, okay? But the Act is very clear, basically it says in order to prevent that from happening and the development of the disease you need to make sure that miners are being protected at each individual shifts. Nobody's tracking these things and the intent is to ensure that no one has experiences or develops the disease, the solution is make sure that no one is overexposed in individual shifts.

Don't permit, you know, your averaging

saying, well you've got some shifts that are low, some are high, it averages out. The fact is this, if you're overexposed on a particular shift you can't suck that dust out of the person's lungs. And one final point, okay? You mentioned about there's a lot of concern about citing on single samples, okay? Well the intent is when you use the continuous dust monitor which gives you measurement in real time, certainly enables you to respond during the shift to prevent anyone from being overexposed.

And that's the intent of continuous dust monitoring is at the end of the shift no one would be ever overexposed and so you can take corrective action, intervene during the shift to prevent that from happening. So if it's implemented in the way it's designed to be, then there should be no concern about being cited on individual shifts because there should be no overexposures because you've taken corrective actions.

MR. WATSON: That is incorrect. We have ran 1,000 samples with the PDMs and our operators are instructed do everything feasible to make sure you are below 1 milligram. And as much as outside it may be easy to do, when they're down there operating and they're watching for the shuttle car and they're watching the roof and they're watching the miner and all the other things they have to watch, and you also have to remember that it just shows a cumulative concentration and a 30-minute weighted average, it does not show instantaneous dust.

And even per our instructions to where we've told them, do not, you know, even if you have to stand there, don't let that come over 1 milligram, we still have 40 percent over .8 and about 30 percent over 1, even though that they're trying their best. I mean you've got several limitations, one, they're not just sitting there watching the PDM the whole time, two, it's not giving them an instantaneous reading either. So I think that's a very incorrect statement to say if you have a PDM you can always be under .8, 1, or whatever, that's not true.

MR. NIEWIADOMSKI: If you've mentioned that you're concerned about being cited on a full shift exposure and there you're talking about you want instantaneous. Instantaneous is not accurate at all, we feel that that's of no value. But the fact is there's a design capability in that unit which I'm sure you applied is when you program that standard it's going to tell you during a shift, you know, whether or not you're approaching, you're 25 percent of the standard, 50 percent.

That indication there, that capability is intended to for the operator to take appropriate action. And as you've read the proposal it's putting the responsibility on the mine operator, not on the miner to be looking at it all the time, because we know he's got a lot of jobs to be concerned about. So it's the mine operator's responsibility to check it as frequently as possible to prevent an overexposure to occur. I don't have any more questions.

MR. WATSON: There's still too many unknowns between when he sees that 50, a 75, at 80 percent, at 90 percent. You know, what happens if the manager hits the dust, a bump on the way out or the road's dusty, or the miner didn't wash his jacket and when he puts his jacket on the dust, what happens if the wind's blowing when he gets outside and that blows dust into his lungs? What happens if, you know, the cleaning service is sweeping the floor? You can't instantly turn that off when you get to that .8 or 1.0. I mean we have wet heads, we've done all kinds of things to make sure our dust is as low as possible and we still have 40 percent of our samples over .8.

MR. THAXTON: My turn. Let's switch gears a little bit. I'll start with Mark first just because you presented first. In relation to your slides on slides 16 and 17, and if we actually were asking questions while you were doing your presentation I would have asked you to back up to them so we could actually look at them. In your analysis of the data and your presentation of how many samples would have exceeded the standard based on analysis of what's out there right now, looking backwards.

And I have to say in addition to what George just said is that the current data that you're looking at mine operators have an expectation of meeting 2 milligrams, not an expectation of meeting 1 milligram. So their intent or their purpose right now is to put enough controls in place to meet the standard that they're on, would you agree?

MR. WATSON: Well I think you also have to recognize that a lot of these MMUs we're trying to comply at a level much lower than 2 milligrams because of reduced standards due to silica content which, you know, haven't adjusted for that.

MR. THAXTON: Let's don't get into a lot of them because we have to know the exact number --

MR. WATSON: The average applicable standard is significantly below 2 milligrams.

MR. THAXTON: Correct, and an operator even without the incentive of having to meet a 1-milligram standard they're attempting to get the dust levels lower, correct?

MR. WATSON: Right, I think it's more of a black and white issue in terms of how operators try to comply, you try to reduce the dust levels as much as possible, you don't try to reduce them to just below the standard.

MR. THAXTON: Okay, but if a mine operator is faced with a 1-milligram standard do you not think that you're going to do additional controls or do additional things to ensure that you're going to meet or have a reasonable expectation to meet that 1-milligram standard?

MR. WATSON: As I said before, I think that our industry has implemented a lot of controls, technologies, improved work practices. But when it comes down to it a lot of this has to do with human behavior, it's where people stand. And, you know, the operator understands it's completely responsible for all this but we can't always control where individuals stand and, you know, that makes a bigger difference in dust exposure because of short duration exposures than a lot of the controls would, you know, air, water, dust.

I'm not saying that we can't do better and continue to improve. That we will, I think we will do that. But the reality is there's not a solution out there. If I thought that it was simply a matter of a capital investment to make in a coal mine, that would be one thing, but that's not what I'm saying. I'm saying the fact of the matter is the only way that you can comply with this rule, in many cases thousands, tens of thousands of cases per year, is to stop production. So this rule will in fact curtail production.

MR. THAXTON: The number of citations that you've said were likely to be issued based on your analysis of the data that's out there was several tens of thousands, correct?

MR. WATSON: I came up with the number of 220,000, slightly over 220,000 for DOs and ODOs alone.

MR. THAXTON: Okay. You're assuming that the agency is going to cite each and every sample each and every shift that exceeds the standard?

MR. WATSON: That is correct, I'm assuming each individual single shift overexposure results in one citation.

MR. THAXTON: Okay, even though the agency has never enforced single sampling even in the past when it was implemented we never implemented that in that fashion.

MR. WATSON: Well I'm not picking and choosing whether I'm going back and looking at historical versus proposed, I'm doing this analysis under the assumption of the proposed rule.

MR. THAXTON: Okay, but you're really making an assumption of that we're going to issue citations. What you actually had found is you had this many sampled shifts that came to this level and exceeded the 1-milligram, not necessarily that that's the number of citations that the operator would be subjected to.

MR. WATSON: So you're telling me that the proposed rule is not requiring us to comply with those levels on a single shift basis and that they won't be citeable offenses if they're overexposure?

MR. THAXTON: If you understand the regulation it has a weekly exposure as well as a single shift.

MR. WATSON: I understand that, yes.

MR. THAXTON: If the agency would issue a citation based on a weekly exposure your single shifts overexposures are already accounted for in the weekly, so you would not be getting cited twice for the same thing.

MR. WATSON: You could though.

MR. THAXTON: No, we've never issued double, what we call double bang or double cited people for the same exposure. There's never two citations issued for a single exposure on respired dust.

MR. WATZMAN: So are you telling us that's the agency's intent?

MR. THAXTON: We've always, that's what the weekly is designed for is that if you have a weekly exposure you would be out of compliance with the weekly. Those individual single shift exposures are accounted for in the weekly.

MR. LOVELL: In our analysis we didn't do any look at weekly exposures. So are you saying that when an individual sample goes over on a Monday or Tuesday or Wednesday that MSHA will not cite an individual sample?

MR. THAXTON: If they are out on the weekly the weekly is the preferred citation.

MR. LOVELL: Preferred, but the question is are you going to cite if Monday there is a sample that's 1.2 and the results have to be cited within X number of hours, is that a citation or not?

MR. THAXTON: The samples will not be

submitted until the end of the week. You'd never issue --

MR. LOVELL: Mark's assumptions, our assumptions were not that any weekly citations would be given, that you never go over the weekly limit. So are you saying that if you don't go over the weekly limit but you have three samples that were over the daily shift limit, would that be three citations or one?

MR. THAXTON: What we have done in the past that would be one citation.

MR. LOVELL: Under this proposed regulation, this has never been implemented, so what does this regulation, if Monday, Tuesday, and Wednesday were all 1.1, Thursday Friday were .5 and .5, how many citations would that be?

MR. THAXTON: As it stands right now given that there's no other circumstances surrounding this, the agency has in the past issued one citation indicating all the overexposures, but on weekly.

MR. LOVELL: I'm asking under this regulation, not the past.

MR. THAXTON: Under this regulation that was our interpretation of what we were writing, that we would handle this the same as what we have in the past unless there is some other situations that would warrant a different consideration for it.

MR. LOVELL: So just to make sure, if the weekly exposure is under the weekly limit then there will only be at the most one citation per MMU?

MR. THAXTON: Under normal circumstances that's true, in a week.

MR. LOVELL: What would normal circumstances be?

MR. THAXTON: That there's no extremely high exposures. If you have somebody that's on a 1-milligram standard and they get 3 milligrams of exposure on a daily, there may be consideration then that you need something other than one citation. Generally speaking if somebody's doing all that they can, we have --

MR. WATZMAN: Where is that in the rule?

MR. THAXTON: That's just, it's not explained in the rule because it's not the rule, this is enforcement.

MR. WATZMAN: So we're making this up on the fly then, Bob.

MR. THAXTON: No, it's not making it up, it's the same as what we've done in the past.

MR. LOVELL: Would you disagree that MSHA has the ability to write three separate citations in that example?

MR. THAXTON: It could, yes.

MR. LOVELL: It could.

MR. THAXTON: Yes, it could.

MR. LOVELL: Okay, there's nothing to prevent them from writing three separate, okay.

MR. THAXTON: But your thing with the weekly is that if you're writing a weekly you've already addressed the individual exposures. So if we write a weekly exposure being exceeded there's no reason to write the individual exposures because you've already addressed them in the weekly.

MR. WATZMAN: George, this probably gets to my point about lack of clarity.

DR. WAGNER: I'm sorry, gentlemen, it's getting a little too rapid fire for me at the moment.

MR. WATZMAN: I'll be quiet.

MR. THAXTON: The only thing that we were asking is that your analysis is determining the number of sample shifts that you looked at that exceeded the standard, not necessarily how many citations would be issued, because you didn't look at the weekly you said?

MR. WATSON: Yeah, and so what I was going to say, you know, depending on how you choose to enforce it it could be fewer or in fact it could be more because the weekly exposure those are additional citeable offenses. But you're correct, this analysis does look at individual shift overexposures and the assumption that I made was each one of those individual events would be a citation because it is in fact a citeable under the rule.

MR. THAXTON: When you applied your analysis what level did you consider as being exceeding?

MR. WATSON: I used 0.8 because of the 10-hour shift.

MR. THAXTON: At what level though, what level did the sample have to be to exceed that?

MR. WATSON: Well I mean if you're going to get into the ECV value chart which is, you know, I assume what you're leading into, doesn't it have to do more with the variability of the instrument than it does with the actual concentration in the atmosphere?

MR. THAXTON: The issue though is that you were trying to say this is how many citations could be issued. If you're looking at citations the ECV values are the citation levels. So if you're not exceeding the ECV you're not exceeding the citation level there is no citations issued. The ECVs are you meet or exceed them then you would be in noncompliance. If you are less than ECV --

MR. WATSON: I could multiply the .8 by 1.125, that would take into consideration the ECV correlation for a .8. That's --

MR. THAXTON: But I'm asking did you consider them?

MR. WATSON: I looked at them, you know, for a 1-milligram level. You can go back and run the same numbers. Yeah, it's going to be slightly less, but it's still a huge number. I mean we're talking about still well over, you know, 100,000, you know, approaching 200,000 even at a 1-milligram level.

MR. THAXTON: Okay.

MR. WATSON: Which is a .8 with an appropriate ECV value.

MR. THAXTON: Heath.

MR. LOVELL: Yes.

MR. THAXTON: We'll give Mark a rest. You indicated that all the CPDMs that you counted as being returned were for the things that weren't done at the mine site, repairs that were not?

MR. LOVELL: Things we did not have the ability to repair, that's correct.

MR. THAXTON: What repairs did you all

perform at the mine site?

MR. LOVELL: There is on the hoses there's certain repairs that we could do on the hoses between the unit and the cap light.

MR. THAXTON: I'm sorry, what kind of repair to the hoses could you do?

MR. LOVELL: I'm not for sure, I didn't actually do those repairs myself.

MR. THAXTON: Is it possible that you would be able to provide us information on what you were able to do at the mine site versus what you had to submit so we'd have an understanding of what kind of repairs?

MR. LOVELL: I can provide a list of the parts that we buy that we do on-site maintenance with.

MR. THAXTON: Okay, that would be a big help. Also in relation to your information as where you did the comparison sampling between the gravimetric and the CPDM.

MR. LOVELL: Yes.

MR. THAXTON: You indicated that you looked at those concentrations. Were those gravimetric samples, are they the ones that are required under Part 70 so that they were compliant samples for regulation?

MR. LOVELL: Yes, sir.

MR. THAXTON: So those samples were collected for 8 hours?

MR. LOVELL: That's correct.

MR. THAXTON: Were the CPDMs also only ran for 8 hours?

MR. LOVELL: Correct.

MR. THAXTON: So they were not full shift surveys even though you said you work 10-hour shifts?

MR. LOVELL: They matched the gravimetric.

MR. THAXTON: Okay, so that's all I wanted to find out because, you know, the CPDM definitely can be run for a full shift if you're trying to educate miners on how to best protect themselves and stuff. Were you using the CPDMs in that fashion or were you only using them in relation to your compliance sampling?

MR. LOVELL: The vast majority of them were 8-hour. There were a few were in conjunction with our local MSHA office we ran ELF pumps and gravimetric longer. But the vast vast majority of them were done in comparison with our compliance samples, therefore both devices were 8 hours.

MR. THAXTON: Are you using, this will be my last question for you, are you using the CPDMs every time you collect gravimetric samples or are you only using it at specific time periods with specific people?

MR. LOVELL: With every sample as much as feasible. And I make that clarification because if our local field office walks in and there's an impact inspection where they sample three, four, five, six, and then use it one time, we don't have enough PDMs that I can put a PDM with every gravimetric. If feasible and the number of gravimetric samples are less than the number of PDMs that we have on site, we operate a PDM paired with every gravimetric sampler.

MR. THAXTON: Okay, thank you.

MR. LOVELL: One clarification just real quick on what Mark, you know, I think it's important to point out and it's been brought up in the past that, you know, you can't visually see 1 milligram or 2 milligrams in the air. So I think, you know, I still have some issues that mines aren't trying to comply with 2.0 because for most of the mines and most of the samples they don't have PDMs and they don't know what 2.0 looks like, so what they're trying to do is make sure the dust is as low as possible because that's the only thing they know to do.

MR. KOGUT: I have one question for Mark

Watson, which is in the exposure assessment you did, did you have an opportunity to look at the exposure assessment that was part of the quantitative risk assessment? And if so, did you see any inconsistencies in the exposure assessment you did based on MSHA's past data and what was presented in the risk assessment?

MR. WATSON: I didn't. Are you sure this question should be directed to me? I didn't look at the QRA. I mean I looked at the database numbers and analyzed that and presented that information.

MR. KOGUT: Okay. And the other question I have is for Heath Lovell. Will you be submitting the raw data on the side by side comparisons that you've compiled? In other words beyond the summaries that you presented will you be submitting the actual data?

MR. LOVELL: We're prepared to do that at the end of the written comments, yes. And back to Mr. Thaxton's, it will have the actual -- numbers listed in a --

MR. KOGUT: And maybe also the duration for each sample.

MR. LOVELL: Yes, sir.

MR. FORD: Mark and Heath I have some questions for both of you. Just first to get a better understanding of something you said, and you both may have said this or one of you, I'm not exactly sure, but you made the comment that the engineering controls that are being used at least maybe by Alliance or you even said by the industry are as much as they can do now.

In the cost analysis we estimated that the biggest ticket cost item would be the CPDMs and the use of the CPDMs, but the second biggest cost item would be the installation of additional engineering controls by operators in order to implement the proposed rule. You're not suggesting, or are you suggesting that we, you know, perhaps we made a mistake and that if operators are doing everything they can do then that number should be adjusted to, that is the cost of additional engineering controls in the cost analysis should be adjusted to a very low level or something very minimal because mine operators are doing everything they're doing now?

MR. WATSON: Well I guess that's one way to twist what I said, but --

MR. FORD: Well no, I'm not trying to twist what you said, I'm just trying to understand. I told you we're not competing for the engineering controls and how to bid costs in proposed rule, trying to get an idea of where to move it.

MR. WATSON: I don't think that everybody's doing all they can do next year. Stuff is being phased in, you know, we have a number of wet head continuous miners, others are continuing to make investments in that. I know NIOSH has an outreach program and there's a lot of research that's ongoing so I'm not going to sit here and say that, you know, we're doing all that we're going to be able to do in the future, no that's not the case at all.

But there aren't easily identifiable solutions in the form of engineering controls to look at it and say that we could purchase this and be able to comply with this rule. There are so many traps in the rule where we won't be able to comply with it, it makes it hard to really value or understand from an engineering standpoint what the true value of investments would be.

In reference to the preliminary regulatory economic analysis, I used some of the information, I didn't have a chance to study all 220 pages. I did find that the number of cassettes or number of filters that would be required each year, as you noticed I used that in the presentation so that was consistent with some of the other work that we did and I did find a lot of the identification of the administrative costs to be valid and useful information, useful in helping me understanding the rule.

But there's one glaring omission in that, you know, there's no cost associated due to the impact to production, to the lost tons, to the decreased productivity associated with complying with this rule. And I think that's because you made an assumption that there are in fact engineering controls that are readily available that can be purchased and applied when in fact I'm saying that there aren't, those systems aren't out there, and the only way that we can comply will be to suffer production disruptions.

MR. FORD: Right, okay, so it's my understanding just to go back to my original question that there is additional engineering controls that the industry could implement that would cost them money if they had to comply with this proposed rule?

MR. WATSON: As always it's hard to quantify what those are and calculate the total cost or total impact to the industry. You've got to look at it on a mine by mine basis obviously and every mine is in fact unique. So of course there's going to be different things at different mines.

MR. FORD: I understand. And just to

clarify another point, you did estimate some delayed production costs concerning the fishtail ventilation cost analysis, but we might not have estimated as much as you want us to estimate for other areas, and we would again ask for your help on comments for that. But let me ask you another question. When you've been using the CPDMs since October 2009 and all the way up to today you continue to use it.

Has there been any situation, a situation whereby on any shift you have used a CPDM and you've looked down at it and said, hey there's a potential problem here, let me do something now or maybe on the next shift, and has anything happened like that whereby you've taken that action and it has corrected something that for the present shift or the next shift? I'm not talking about how many times, but has it ever happened?

MR. WATSON: Oh yeah, of course it has. We can state that, you know, we feel that the PDM, the CPDM is in fact a valuable engineering tool. We actually own 60. 40 are represented in this presentation but we had 20 more we just didn't collect the data and get it grouped together into the presentation. But, you know, we wouldn't have purchased effectively, you know, 60 at the cost identified as nearly, you know, three quarters of a million dollars of an investment for something if we didn't believe that it was going to be effective.

And if you talk to individual miners they do say, you know, hey I was able to look at where I was standing, my positioning, the impact is all human behavior. It's behavioral issues and really it's training, training the individuals to know the relativity, you know, it's good versus bad, better, worse. We are proud of them and, you know, and I think our operators are glad to have had the opportunity to use them.

Not all of them. Some of them don't like them, particularly guys that have to change seats on several cars because of some ergonomic issues and such, but I mean we just, it would be somewhat anecdotal, we haven't attempted to quantify it, but I can tell from personal experience and Heath can share more, yeah there's lots of success stories.

But it's not success stories in that we changed our ventilation plan because of the PDM, it's the operator decided or understood, learned that, you know, his exposure level at the time was higher than he thought even though because, you know, respirable as we know is not all visible, you know, he may think he's in a good area but he's not, just gives him the information.

But the interesting thing is they don't, a common response is they don't want to wear this every day every shift, none of the guys do. They want to use it as a tool, they want to understand, they want to learn, but they really don't want to be wearing this thing every day. I can't say that we've, we've had hundreds of people wear these devices and I'm sure none of them would say that they would prefer wearing this more than on an intermittent basis.

MR. FORD: Mark, based on what you said about that you calculated the number of additional samples that the proposed rule would produce which would, was somewhere like over 500,000, and then you applied to that the current violation rates for DOs of 34.3 and for ODOs of 23.5. So those rates are based on the current engineering controls that are being used today in mines and also based on the use of a gravimetric sampler, correct?

MR. WATSON: Yeah, that's correct, it's 2010 results.

MR. FORD: Okay. So it would be reasonable to assume that if the proposed rule will do what you say, and that is will cause mine operators to implement engineering controls above what they have now, and also will produce to measure dust with a sampler that's completely different than what's being used now, a sampler that has a real time value, then both of these factors could possibly reduce, what is reasonable is that both of these factors could reduce this 220,000 violation number that you came up with. Is that true?

MR. WATSON: Yeah, but it's a matter of how significant is that reduction going to be. I mean if we go from 220,000 which might be less than 200,000 based on our discussion, but if you factor in quartz it's going to be significantly more than that. So if you cut it in half you're still over 100.

MR. FORD: Sure. Sure, you're just coming along then to my next question. In your analysis have you done any reanalysis of how that number could be reduced if you included those factors?

MR. WATSON: It'd be nothing more than a guess. It would be, I mean we do not have that information in the future. And I think it gets back to Bruce's earlier point in that we need to, you know, possibly collect more information with these tools so that we can use that information to evaluate the steps forward, the pathways forward.

MR. FORD: Heath, you talked about the CPDMs that you sent back to the manufacturer for repair. Those that were sent back were, what percentage of those repairs were done under warranty and what percentage do you think were done that were not under warranty?

MR. LOVELL: I have the data and that'll be provided in the written comments but I don't have that. I believe most of them are included in the five-year service plan that we purchased. The problem is I think it's difficult to quantify, I don't know that any of those are manufacturing problems as much as they are problems because we use those devices every day of the year and, you know, just like any equipment in the mine, you know, it takes abuse.

MR. FORD: Sure. And can you provide the average turnaround time that it took to get those CPDMs back, and how if like for repeated repairs that were the same that turnaround time might be improved?

MR. LOVELL: That data's incomplete. We can provide you what we have, but again back to, you know, we started this program back in 2009 and so back then we didn't think that was going to be an issue, so it was very late in the process that we started tracking when the devices were sent off and when they came back. So I can provide you with what we have but it will be incomplete data.

MR. FORD: Okay. And again I don't have what was presented in front of me, and for me at least the slides moved rather rapidly, but am I correct that the price you paid for your CPDMs like on average for the five-year service plan was $12,900?

MR. LOVELL: I think that was just for the device, I think with the five-year service plan it was more. I would suggest it was $12,900 list price plus $2,875 is the five-year service plan for a total of $15,775. I would suggest rather than maybe us providing incomplete manufacturing data is that you could request from Thermo. I think they would have the complete set of when they get the devices and when they sent them back out.

MR. FORD: Sure. But if you can in your comments just put the prices that you paid for your CPDMs and filters that would be great too.

MR. LOVELL: Okay, and it's on the presentation which you'll have electronically.

MR. FORD: Okay. I just have one further question and I don't know if this is a question for you, Heath and Mark, or maybe also for Bruce. I noticed in any of the, in your presentations and anything that Bruce talked about there was no mention of the costs that operators might incur that concerns miners having black lung, specifically like medical costs, legal fees costs, insurance premiums, worker's compensation costs, et cetera.

Is there any way that, well first of all I guess the question is for your specific mines and maybe for Bruce too, are these costs that are important in concerning the amount of them to the mining industry or are these things that you pretty much think you have a handle on? And as a second part of that question is that can you provide like information on these costs in any of your written comments?

MR. WATZMAN: The best source of information that exists in terms of the historic costs of the Federal black lung program can be obtained from the Office of Coal Worker's Compensation or Coal Worker's -- Office of Worker's Compensation, and even one of your sister agencies within DOL. Cost isn't the driving factor. The driving factor is eliminating this disease and eliminating miner suffering.

This program has cost a phenomenal amount in terms of dollars. It's cost more in terms of human suffering. So yeah, we can quantify the cost, I think, Greg, you may have had it in one of your slides introducing today, the programmatic costs from the Federal black lung program, and it's a daunting number. I would say to you that that program, and I've been tracking that program since its inception, has its ups and downs.

You know, there are questions that are raised and I'm not going to debate them here as to whether or not all the claims are valid and whether we're dealing with a Congressionally mandated disease, a legal disease, as opposed to a medically determined disease. That's a debate for another forum for another day. But, you know, you can quantify, you can't quantify the costs that are responsible operator costs because those aren't reported.

I'm not sure the degree to which you could quantify worker compensation costs. You know, I don't have those numbers and I don't know if you can get them. But the one number you have that's reported annually which I think was referred to earlier is the cost of the, the costs incurred under the Federal Black Lung Disability Trust Fund.

MR. FORD: No, Bruce, I realize we have data that looks at like the global picture costs, but what I'm trying to find out if you perhaps in your, can find out with your members of trying to put that in sort of like a micro example, look at individual mines and see what operators and see their specific situations. If you could provide that in your comments that might be helpful.

MR. WATZMAN: I can't promise anything, Ron. We'll do what we can to respond, you know, to your request.

MR. FORD: Okay. Thank you for your answers.

MS. OLINGER: This question is for Mr. Lovell. Clearly you don't support using the CPDM for compliance based on a single sample. Correct me if I'm wrong, I think you had a scatter plot that showed CPDM and gravimetric measurements and that although averages were quite close, single shift samples were all over the map, is that correct?

MR. LOVELL: That's correct.

MS. OLINGER: So what is your position on using the CPDM to monitor weekly respirable dust concentrations and use those results for compliance with a weekly standard?

MR. LOVELL: I don't know that we've had time to evaluate what that would look like on a weekly. What we do support is continuing to use it as a training tool. And back to the earlier question, you know, we do see behavior modifications from the PDM and we, you know, and we continue to support that.

MR. WATSON: By the fact that the average is, you know, over 955 samples are almost exactly the same, .82, .83, one one hundredth of a difference, you know, that's pretty impressive. So we've stated that single shift there's a huge variance, they aren't accurate. An average of 955 shifts will be, so it's somewhere in the middle. We really haven't gotten into the five shifts, but we do know it's somewhere between 1 and 955, but we would like to and we will, you know, try to do more analysis of that to try to better understand.

MS. OLINGER: Thank you.

MR. ROMANACH: I just have one question, Mr. Lovell. You said that of the 40 CPDMs that you all purchased 35 percent were sent back for repair in the first month. Do you have --

MR. LOVELL: Within the first ten months.

MR. ROMANACH: Oh, first ten months?

MR. LOVELL: I'm sorry, within the last ten months. The very first few months we didn't keep track of the data. In the last ten months that's how many have been sent off from January 2011.

MR. ROMANACH: Okay, I have no further questions.

DR. WAGNER: Thank you.

MR. NIEWIADOMSKI: Heath, you mentioned you've been collecting side by side samples, that's how you characterized it.

MR. LOVELL: Yes, sir.

MR. NIEWIADOMSKI: Can you explain exactly what that means, where the units are?

MR. LOVELL: Yes, sir. Starting off, originally, and I believe the regulations allow within 36 inches if I'm correct of where the inlet of the gravimetric can be, the gravimetrics is usually on their suspender very high close to the belt, sometimes it's on their collar. The PDM inlet is on the cap light. So originally that's where the two inlets were, so with the person's inhalation somewhere in the middle.

However, we've seen for quite some time now that the operators don't like the cap light. Most of our operations have the Kohler halogen light bulbs, the Kohler, the new Kohler with the little battery, you've got the halogen. That light is so much brighter especially for a miner operator to where they want to see the top, the bottom, they want to see when they're in seam that most of our I want to say especially for the DOs, they will wear their regular cap light and then they will put their light cord right next to the gravimetric so the inlets are right next to each other. That did not happen in the beginning but and I can't tell you how many samples or what, but currently most are DOs who put the two inlets together and use their existing cap lamp.

MR. NIEWIADOMSKI: Thanks.

DR. WAGNER: Great, I just have a few questions. Mr. Watson, you started off speaking about sampling variability, variations from sample to sample, and you probably heard later Dr. Cox suggest focusing on the high excursions as a potential source of inflammation and disease. Do you have suggestions for sampling strategies that would be directed towards reducing variability?

MR. WATSON: I think that might be better addressed by Dr. Cox than me.

DR. WAGNER: Okay. Do you want to talk about it?

DR. COX: Sure. The variability that I'm thinking of here, it's not variability in the samples but variability in the exposures, and especially in the cumulative exposures over a long time. So I think that your question if I heard you correctly was do we have any suggestions for sampling strategies to reduce variability. Sampling doesn't reduce variability --

DR. WAGNER: To reduce variability in exposure.

DR. COX: Yeah, so I think I'm missing something because sampling maybe if it's done well it tells you what's there but it doesn't affect the variability.

DR. WAGNER: Sampling in enforcement strategies.

DR. COX: Ah, okay. So then I think I don't yet have an answer. What I've suggested is the process for getting there should be to do a rigorous statistical design. By that what I mean is we should be at least able to answer questions such as, if we wanted to enforce today's standard but we went to a single shift sampling with its greater variability how would we have to counteradjust our decision rules?

So I'm thinking, suppose that an average of five samples says you're okay, you're beneath our desired level. Is it the case that all five of those are likely to be below the standard? Maybe not, maybe some are above, some are below. So if what we're trying to do is to replicate today's standard, at least be able to enforce that using a single shift approach instead of an average of five, we would at least have to understand how do we counteradjust, in other words change the decision rules so as to replicate what we have now.

If for health reasons we want to do something different from what we're doing now, and you know I feel that we don't have any evidence that suggests that that would be effective, but if we did want to do something different, we would similarly have to say, what is the decision rule that when combined with our sampling strategy and its increased variance will reproduce the overall level that we want to enforce? So to summarize, the process for getting there is to apply statistical decision theory to the variable sampling processes that we have, paying attention to how often you'll be wrong and what decision rules you should make. But I have not yet done those calculations.

DR. WAGNER: So let me just go back, you are saying that you don't think that coal miners working under current exposure and enforcement systems do not have a problem or are any of them having problems?

DR. COX: I think that, that's a, okay so that's a complicated if. The if part has to do with -

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DR. WAGNER: No, it's actually very simple. There are current circumstances that people are working under. Those circumstances are complex, they involve current mining approaches, they involve current mining environments, they involve current sampling strategies, current enforcement strategies.

DR. COX: That's the complexity I was referring to, yes.

DR. WAGNER: There is complexity. So you have on the one hand reality, today's mining and historically mining over time. You have something else which is the health status of miners. Do you feel that any miners now have had their health adversely affected by the complexity of circumstances that they've experienced in the mines?

DR. COX: Certainly. I think some miners are still getting sick, we know that.

DR. WAGNER: Okay, so what would you do to reduce the probability going forward that more miners not continue to get sick.

DR. COX: I think that without having yet done the calculations I think the most important thing is probably to reduce the variance in exposures, and especially the high tail of exposures.

DR. WAGNER: Okay, which is actually what I was starting the conversation with, how would you do that?

DR. COX: Again I'd have to think about it more, but I would begin by collecting and reporting data on the high end of the exposure distribution. So I wouldn't report data in terms only of means. I would also say what fraction exceeds each different level that we're looking at.

DR. WAGNER: So but clearly from the analysis that Mr. Watson did, each of those samples is being reported now.

DR. COX: And not being used as a basis for decision making.

DR. WAGNER: So you're saying that the variability is not being used in decision making and your recommendation is to consider the variability and in particular the excursions above the, above what level?

DR. COX: That's a question for a toxicologist. I would say you're asking me where is the threshold in effect. And I think that would really take some study to answer so let me not hazard a guess. But yes, I'm saying the current risk assessment is being done based on mean exposure levels and it needs to be done based on high exposure levels.

DR. WAGNER: I think while I've got you and Mr. Watson sitting next to one another, Mr. Watson mentioned that there's no better way to project future results than to look at the historical data that he's been analyzing and presenting in terms of his estimate of the number of future citations that the agency would be doing. What's your reaction to that statement?

DR. COX: I think that sounds plausible to me. I think his statement as I understand it is that if you want to know what the exposure distribution looks like the best starting point is what has the recent exposure distribution been.

DR. WAGNER: So you recommend looking in the rear view mirror?

DR. COX: Looking a few feet, but not a few miles.

MR. WATSON: My statement is simply that it's the best information that we have, not that there's necessarily no better way to design a program that could give us more information that could be better predictive. But as of right now it's the best information that we have and that's the reason that we looked at it.

DR. WAGNER: So the kinds of adjustments for example that, Dr. Cox, you recommended that would look at trends over time or, you know, change the technology, whatever the varied potential sources for predicting ahead, these would or would not be things that you would recommend to your colleague as he completes his analysis?

DR. COX: The issue of trends over time is not something that I've referred to in the context of predicting ahead. I mentioned --

DR. WAGNER: Well you talked about secular trends. What are secular trends?

DR. COX: Well actually I didn't use that particular term.

DR. WAGNER: Perhaps I mistook it and that John did. Sorry.

DR. COX: Perhaps you did. But I did refer to trends, and in particular the point that I was making is that regressing past trend variables against each other will produce high correlations and significant looking regressions even if you happen to be regressing statistically independent random walks against each other. Going ahead my recommendation is not to project based on trends. My recommendation is to project based on causal analysis of the relationship between the exposure and risk and to say, in the future how are we going to change the exposure distribution? And then calculate how will that change resulting risks.

DR. WAGNER: Great. And I'm sure we're going to circle back and have more conversation about the information you have provided, but let's -- well do you have any recommendations to, Dr. Cox, again would you have any recommendations to Mr. Watson in things that he should be looking at before he presents his final data analysis to MSHA concerning his projection of the number of citations that would be expected based on his evaluation of the current dust sampling from the last year?

DR. COX: Based on our shared discussion it sounds to me as if he and all of us should be careful to distinguish between potential citations and actual citations, understanding that how many actual citations there are is partially a matter of enforcement decisions and so forth. But I think the basic idea of saying, how often will we be over some standard right now as measured in a new way based on -- distributions, I think that's a very practical and useful piece of information to provide.

DR. WAGNER: Okay, thank you. Anybody else have anything for Mr. Watson or Lovell? I'd like to move on then to Mr. Yanak.

MR. NIEWIADOMSKI: Craig, you've mentioned that you've had the opportunity to look at the specific minute by minute data outputs from the CPDM, correct?

MR. YANAK: From the Excel files, yes.

MR. NIEWIADOMSKI: The information of course, you know, there are various error messages and so forth, that doesn't necessarily mean as we've talked about in a previous meeting because Thermo identified that as an error that in fact something would cause that sample to be voided, okay? It's just a fed flag that there something happened, all right?

MR. YANAK: Right.

MR. NIEWIADOMSKI: You know, whether or not there was a disruption of flow rate, whether or not there is a, when you mentioned offset, it basically it's designed to if you have a 2 percent increase, okay, in the dust loading over a certain duration, and that can happen during a shift.

MR. YANAK: Right.

MR. NIEWIADOMSKI: Okay, that doesn't necessarily mean it's a void sample. My question to you is this. Since you've had the opportunity to look at those printouts, the readouts, was that made available for example Thermo if you had some questions about some of the reading that made no sense to you for example where in fact the mass there was no increase in the mass, okay, and you would expect over time a decrease in concentration, right, was that shared with Thermo, those individual printouts, or just particular problems with the device?

MR. YANAK: I didn't share any of the actual Excel spreadsheets with them, but I talked with people in NIOSH and asked them some questions. I was on a conference call to some tech support people to ask them if they'd seen similar instances on their files and was just asking some questions. Now when I got involved with Thermo was to a great extent was when we had the major problems that all the PDMs tripped, all the time intervals changed back on the, changed to standard time, we got into that discussion.

And we had some other discussions with Thermo about other error issues. But Thermo indicated that part of our problems with the diagnostic errors and various errors was the fact that most of the PDMs that had been purchased were purchased in '09 and that we needed to purchase units that were manufactured in 2010. We bought an additional 10 units that were manufactured in September of 2010 and that's the one that I've had repeated, repeated, repeated mass offset errors on. And I've been in discussion with Thermo over there. George, what we're trying to do is to isolate where we're getting this interference issue from, and we haven't been able to locate it yet.

MR. NIEWIADOMSKI: That has not been resolved?

MR. YANAK: Well when I talked to Thermo initially we talked that possibly it was radio interference. Well I ruled that out immediately. And then when I got talking to the mine site they instructed me that, and this was the only mine that I'm aware of that were operating their remote control unit off the PTO on that. So we took it off there and took it to the long wall to try and isolate that issue and then the offset error came back again.

And so then we put it on a miner that didn't have the remote control hoping that this would go away, but it cropped back up. And we have proximity sensors on that particular unit. We thought maybe it's the proximity sensor, so we took it clear off the miner sections and just had one individual wearing it just traveling around the haulage, and it tripped again.

So then my question to Thermo was, what about variable frequency drives? So Thermo believes that it may be a shielding grounding issue at this point and they informed me that they've got a fix that they're going to be sending to the agency some time late February or early March to see if that is in fact a fix to what we're seeing. So we're not sure right now.

MR. NIEWIADOMSKI: Thank you. You also expressed at least an opinion the PDM is a good engineering device, right?

MR. YANAK: Absolutely.

MR. NIEWIADOMSKI: Okay. And however you also said that while it's a good engineering device it's not ready to be a compliance tool?

MR. YANAK: For single shift samples particularly. What concerns me to some degree, George, is when we see this trip in its very last reading at the end of the shift on the, and I'm trying to recall, I'm sure Bob will remind me, on the 2 milligrams I believe the ECV value on the PDM was 2.17, is that right?

MR. GLENN: For the --

MR. YANAK: Yeah, for the single shift?

MR. GLENN: Yes.

MR. YANAK: Okay. What I'm seeing, George, is we'll see at the end of the shift what you would typically think, okay, you're coming out the haulage, you're probably in a highly intake area, you're on the elevator or what have you, but the very last reading on a large number of shifts you'll see the flow rate go, let's say it'd been running 2.2 liters per minute for the entire shift, this thing may blip to 2.0, 2.05, but you'll actually see that and the shift number change by a hundredths of a place, maybe on hundredths is not uncommon, two hundredths, three hundredths. And if we're going to issue citations on a single shift based on that end of shift number, I'm a little bit suspect why that end of shift number is changing in that very last one-minute reading of the day.

MR. NIEWIADOMSKI: One final question, okay? You've indicated that not to use the PDM as a compliance tool if you're going to cite on single shift results, right?

MR. YANAK: Right.

MR. NIEWIADOMSKI: At the end of shift. Would your opinion be different if in fact the agency was not citing on the end-of-shift measurement?

MR. YANAK: What I do --

MR. NIEWIADOMSKI: Using it as a compliance tool.

MR. YANAK: What I do know, George, and I was involved in this prior to my retirement, when we discussed the implementation of the PDM as an enforcement tool through BCOA and United Mine Workers, we collectively had an agreement that we were looking at some type of a dose concept. At the time I left we didn't have a complete resolution about a dose concept but my understanding is that BCOA and the Mine Workers have adopted an agreement whereby they support the weekly dose concept.

MR. NIEWIADOMSKI: Thanks, Craig.

MR. THAXTON: Craig, I only have two questions for you, make them quick and easy for you. Can you tell us, I know you've said you looked at a lot of CPDM files. How many actual CPDMs did those files represent?

MR. YANAK: I had two primary ones, Bob. There were two mines that used it on a very frequent basis, and the rest constituted one, two, four other mines. But overall there was probably, and I'm guessing here at this point in time, Bob, I'm going to say there were probably about 12 different PDMs that we looked at the files off of. Because one mine had four or five of them, he actually he had breakdowns, we would replace the broke down ones, send them to Thermo, we'd get him up and running.

And he had this one unit that we discontinued that's having these tremendous mass offset errors. But we'll use them on a weekly basis more as a troubleshooting basis to see where this frequency interference is coming from and not as an actual engineering tool to kind of see what the day is doing or, you know, if we've implemented something did we make an improvement.

MR. THAXTON: In your submittal to the agency with your written comments and stuff, will you be able to provide us with your data that you actually looked at and your analysis of that data indicating these the observance of these problems?

MR. YANAK: What I will do, Bob, is, obviously I don't own those, you know, as a consultant I would have to get that clarified by the person who owns the Excel files if they would be willing to share that. And I probably don't see a reason why they wouldn't. You know, I've looked at hundreds of these files. I mean what I'm seeing is not uncommon on a large number of these files with, you know, the extended mass 0 not changing, the cum concentration not changing. Some of the other occasional blips are not all that common, but I mean as far as hundreds we'll be talking, you know, five or ten units per sheets, because you know how big these files are.

MR. THAXTON: Yes I do. Thank you.

MR. YANAK: All right, I'll get you, if they're okay I'll get you some. If you need more, we'll move on from there.

DR. WAGNER: Okay, I had wanted to give a shot at getting the questions and responses done before breaking. It looks like there's some fair level of desire to take a break for lunch. So long, I'm just going to ask for assurance that the people who haven't yet been in a position to respond to questions, will you be able to return if we take a break now or do you need to just move forward?

DR. GAMBLE: I have a train at 3:00.

DR. WAGNER: Yeah, we wanted to be kind of, you should have let your colleagues know that. And I will if no one has any objection why don't we move on to asking Mr. Gamble questions about his presentation if the rest of you don't have trains and planes? Automobiles, so let's start -- do you want to start with John Gamble? Pass it down.

MR. KOGUT: Dr. Gamble, did your comments that related to the biases induced by the estimates of pre-'70 exposure data, did those extend to your opinion to the Attfield and Seixas paper as well as to the Attfield and Morring paper?

DR. GAMBLE: The pre-1970 extend to all three. The Attfield and Morring, all of those exposures are pre-1970 except for maybe a year or so. In the Attfield and Kuempel the mortality they're all pre-1970, and in the Attfield and Seixas it's only those miners that would have entered the cohort in round 1, and that's not all of them, about half of them came in round 1 and half of them came in basically I think after that. But so I don't know what the proportion is that relates to that particular study in terms of pre-1970 exposures.

MR. KOGUT: Right, so the graph that you put up related to the other two studies?

DR. GAMBLE: Yeah, yeah, there that adjustment is needed. In the Attfield and Seixas, I don't know how to adjust for those.

DR. WAGNER: Just a couple things, going back to the issue of background rates, in the Castellan study what was the background for 2 plus readings on pneumoconiosis?

DR. GAMBLE: I don't know offhand, I'd have to look and see, I don't know.

DR. WAGNER: Yeah, well I suggest that you integrate that when you do look into the line that you put on your graph --

DR. GAMBLE: One other problem is that those are not, I don't know what they are. What Attfield and Morring did in their paper is they pulled selected data of 58, mean age of 58. So they're really interested in what's happening in the older ages in terms of background prevalence. And that sort of information as I think about it is not available for any category, or even for category 1. What they have is the overall prevalence where it's available, and it's not often available, is for everybody. And what you're really interested in is what is -- because those are the ones that get the CWP is in the older age groups, and we don't, basically we don't have much of that data available.

DR. WAGNER: So the miners who are younger than 58 who are showing evidence of abnormality, you'd say that the background rate in younger miners would be less than that at age 58?

DR. GAMBLE: I would think so, yes.

DR. WAGNER: Yeah, and would --

DR. GAMBLE: Just as the prevalence of CWP is --

DR. WAGNER: Yeah. And the background rate of abnormality for people if you're looking at a level of 1 or greater, would that background rate be less or more if you're looking at 2 or greater?

DR. GAMBLE: The background, I would think that the, well the overall prevalences are, you know, category 1 is greater than category 2. Sometimes PMF and category 2 are not that different. So they're at a lower rate than 1. Exactly where that is, I'm not sure. I would guess somewhere between 1 to 5 or 2 to 5, something like that. So we basically just took the Attfield and I guess it's the Seixas, no, Attfield and Seixas discussion of that and took their 5, which as you're correctly pointing out may not be the right number, but it's hard to get that right number.

DR. WAGNER: Right.

DR. GAMBLE: And what we're suggesting is that it would have helped if maybe they could even go within those data sets and pick out the less exposed or least exposed and look at that background prevalence and see, and assume that might be close to what the number actually is. And they came up with the number of 5 percent, which seems high for category 2 and PMF I'll agree.

DR. WAGNER: Yeah. Your conclusions I think were that there should be no excess disease beyond background under the current standard once you account for -- that's right?

DR. GAMBLE: Yeah, that's what this evidence shows. I think you could also say that there is an evidence to lower it based on these data.

DR. WAGNER: Okay.

DR. GAMBLE: Whichever way you want to say that, yeah.

DR. WAGNER: So how would you resolve the concern that on the one hand the, to what would you attribute the disease that is being seen now for people who have worked only under the current standard, recognizing that a standard isn't only a permissible exposure limit but it involves a measuring and monitoring scheme, an enforcement scheme et cetera, to what do you attribute the findings of lung disease in miners?

DR. GAMBLE: We don't have any study done only with miners post 1970. All of these studies have miners that were exposed prior to 1970. So the study that you would like us to draw evidence from, we don't have the study yet. You could in fact do that study because the evidence is out there that you could do that. As far as I'm aware it hasn't been done yet.

DR. WAGNER: I thought that some of the reports from the NIOSH X-ray surveillance program were of miners who had been exposed only since 1970.

DR. GAMBLE: But do they have exposure related to them?

DR. WAGNER: No, all I'm saying is that they have disease related to them.

MR. GLENN: I think those are prevalence studies, right?

DR. WAGNER: Yeah, they're prevalence studies. What I'm asking is, if you're able to identify the people who have disease, prevalent disease, who have been exposed only after 1970, they are people who have been exposed under the current exposure limit and under the current exposure circumstances.

DR. GAMBLE: Then I suggest you do an exposure response study to see in fact where those exposures are occurring so we can use that evidence to develop a standard. And until we have that evidence I don't know how you can establish one.

DR. WAGNER: When the original --

DR. GAMBLE: I would recommend that study.

DR. WAGNER: Okay, good. When the original coal mine dust standard was set, was it based on, do you know the basis for that standard?

DR. GAMBLE: It was based on the standard in the U.S. from British -- from England, it was the U.K. coal mine dust data.

DR. WAGNER: Right, and it was based on observation of disease prevalence at different levels of exposure under that standard.

DR. GAMBLE: No, at different levels of exposure. The prevalence not, under actually whatever the data showed. I mean I don't think the standard necessarily, I think it was higher, it's higher actually than in the --

DR. WAGNER: Sure, please.

MR. GLENN: Michael Jacobson, I think you're aware in his study he showed that if you were to prevent from reaching category 2 it was essentially a zero probability to going on to PMF, and so the standards were largely set at 2 milligrams to try and prevent or to prevent anyone from reaching category 2.

DR. WAGNER: And then as I'm sure that you're aware the subsequent analyses of people who were getting PMF and as Jon just alluded to, that Michael Jacobson and others demonstrated that people were getting, that the original assumption that keeping people below a category 2 would not be successful. You know, the assumption was that it would be successful in eliminating PMF and subsequently that was found not to be an accurate assumption.

MR. GLENN: As I said in my opening comments, later NIOSH data said that the Jacobson data, that there are increased risk category 2. But you asked where did the standards come from.

DR. WAGNER: Yes, right.

MR. GLENN: It came from Jacobson.

DR. WAGNER: Okay, so in summary of this, it sounds like the assumptions on which the original and the current standard were set were based on assumptions that have subsequently been found not to be valid?

MR. GLENN: That's the NIOSH position. I think what we showed today is that there's some concern of whether that is the case.

DR. WAGNER: Okay.

DR. GAMBLE: I actually have a set of slides, not, can't show you, but from Hurley which is another U.K. coal miners with an exposure response analysis that doesn't show excesses below the standard that they have eight collieries that were pretty much alike and they had two outliers that did show, one showed excess below 2 milligrams standard and one showed no effect at all. So eight out of ten of the, nine out of ten of the collieries showed no increased CWP below the 2 milligrams standard, except for the one colliery he did.

DR. WAGNER: Right, and you also have probably Hurley's analysis of the U.S. data as well? Or maybe --

DR. GAMBLE: I analyzed his analysis of his data.

DR. WAGNER: Okay, his analysis of the U.S. data --

DR. GAMBLE: No, it was his analysis of the U.K. --

DR. WAGNER: I understand what you're talking about.

DR. GAMBLE: But I don't have what you're talking about, no.

DR. WAGNER: Very good, yeah.

MR. GLENN: Our report is now 130 single spaced pages and we aren't through yet, so we will draw all of this together at the end before May 2nd.

DR. WAGNER: We're looking forward to that.

MR. GLENN: I'm sure.

DR. WAGNER: And I'm sure that you're looking forward to drawing together before May 2nd so that the agency can take a look at it after the 2nd.

MR. GLENN: Yeah, I get paid by the hour, it doesn't matter.

DR. WAGNER: It sounds like you get paid by the word.

MR. GLENN: No, I'm not a lawyer.

DR. WAGNER: Well, on that note, if the others on the panel are willing to promise to come back what I'm going to do is break until 10 minutes to 3, and anybody who wants to go grab something, there are food options that are in the lobby and just across the street. You're welcome to, I don't think we have a ban on eating in this room, if you want to grab something and come back to the room, that's fine too. We're going to start again with this same panel after the break.

(Whereupon, a brief recess was taken.)

DR. WAGNER: Welcome back. The next speaker that we were going to be having the panel ask questions to was Gary Hartsog, right?

MR. HARTSOG: Yes, sir.

DR. WAGNER: So I'm going to ask the panel to please have your notes and get ready and here we go.

MR. FORD: Mr. Hartsog, I just have one line of questioning, and that is that concerning the section 75.332(a)(1), the fishtail ventilation.

MR. HARTSOG: Yes, sir?

MR. FORD: I think you stated that there would be 200 MMUs impacted, this is what you estimated. And of those 200 I guess 100 of them would be actually eliminated by the rule. I guess what you mean by that is they would choose just not to operate?

MR. HARTSOG: No, what I mean like that is that the MMU couldn't work as a supersection. You'd have, it would be impacted in some way. In other words let's say if it was 100 then 100 miners would have to go somewhere else, continuous miners, to operate.

MR. FORD: Okay, so they could still operate but just in another fashion with maybe installation of some of these controls you talked about?

MR. HARTSOG: Yes, sir. What I would envision is that the mine would have to look at its particular designing situation and see what it would take to turn those into single sections and, if they could, which is a huge question, whether or not the reserve would stand for it, whether or not the legal boundaries would stand for it, whether or not the geology would stand for it, whether or not the ventilation would stand for it. Those are all open mine design questions when you go adding units to a mine.

MR. FORD: Okay, and what about the 100, you're assuming they could operate under the proposed rule by, I'm confused on those other 100.

MR. HARTSOG: I'm making the assumption that the other 100 could continue to operate as with sweep ventilation of some sort. So yes, let's say of those 200 machines, and let's talk about continuous miners, make the terminology easy. If we're talking about 200 machines, what I'm talking about is 100 of those machines would have to go somewhere else because you couldn't operate them as I understand the rule in that situation.

So the 100 that are left would operate as what we refer to as a single section, or using probably sweep ventilation. You know, one thing that we don't talk about here is that fishtail ventilation has been around for a very very long time, and there are other reasons that we use that method besides for dust. We use it because of methane, we use it because of different mining methods. There are a number of different reasons that you use that method of ventilation.

MR. FORD: Okay, I guess you're getting at what I'd like to see just for better understanding. In your written comments then could you like just show like how, you know, these two different groups of 100, how are they different, and why is one impacted one group one way and another group another way and the cause associated with both groups?

MR. HARTSOG: I can show you how they're impacted cost is highly site specific.

MR. FORD: Okay, thank you.

MR. ROMANACH: Mr. Hartsog, I just have a couple of questions. You've provided certain results that could happen if we were to have two separate sections, if by splitting a supersection with two separate sections could result into certain occurrences, for example more stoppings, vent controls, additional film entries. Could you provide us with data for, you know, on which those results could be based and the cost associated with those results?

MR. HARTSOG: I could give you some generic examples. Everything that we work with is proprietary to our clients, so if perhaps one of our clients might be willing to provide something there, but I can give you some generic examples of how that would work. As far as costs go, costs again are, we can identify some of those, a lot of them are very site specific.

MR. THAXTON: Okay, Mr. Hartsog, I have a few questions. First, just to clarify what section 75.332 actually requires, you had indicated that you weren't sure how that regulation was to be interpreted because it could be that you were looking at establishing an intake all the way from the mouth of the mine all the way into the section, is that what you had indicated when you were talking to Craig.

MR. HARTSOG: Yes, sir, that's exactly what I'm saying.

MR. THAXTON: Okay, the regulation, the only thing that was changed because the section 75.332 actually said, you know, originally is that it referred to the working section and the working section had to be provided with intake air that was provided by --ventilation controls. And so the only thing that was added was the fact that we added MMU to it. So there was no change basically anticipated other than changing from a section having two mechanized mining units on it to having a section being one mechanized mining unit.

So the ventilation still would be from mains underground to where you're going to the section then each section would have to be provided with a separate intake. So that's not requiring it to be brought from the outside, it's not requiring a special shaft or anything like that, it's not being established from the immediate outside, but it's tying off the mains just like it does right now. So does that change some of your thoughts on how this will impact some of the mines?

MR. HARTSOG: Well, Bob, you've just confirmed what we've been thinking all along that this is an effort to do away with supersections and to do away with fishtail ventilation. So I'm assuming from what you've just said that that other discussion's moot.

MR. THAXTON: The regulation says that each MMU on each working section will be provided with a separate intake split that's provided by permanent ventilation controls. That's the proposed rule, correct, I mean that's what it is. Now as far as doing away with fishtail ventilation, no it doesn't. You quite possibly can go in and have fishtail ventilation on an individual section with one MMU. That was done in the past for dust control. You bring the air up the center and you have your order on one split and your continuous miner on the other split, great for dust control, that was done for years.

The only issues that we're having here is having two continuous miners on a single split coming up on the section then it's split with the temporary controls up on the working section. So I'm just trying to make sure that you're clear on that when you're making your comments and you're submitting them later, because you said you would be submitting most of your stuff then in writing, the only thing that you were addressing in your comments today and your presentation was on section 75.332.

When you're looking at that, it's not that we're saying that you cannot use fishtail ventilation on a section. It's that you, requires a, the proposal says that each MMU will have to be provided a separate split of intake air provided by permanent ventilation controls. So that was just a matter of clarification so that when you're submitting your comments that we make sure that you're able to present stuff then that would be applicable to what the proposal states.

MR. HARTSOG: Well then, Bob, can you go on and explain to me why that's needed? See I lack the rationale out of the proposal for the rule to explain why that's needed. So perhaps you could explain that to me. That would help me explain back to you.

MR. THAXTON: Well the only thing I'm asking on here is that that's what the rule says in it, is that it doesn't prohibit the use of fishtail, it's only for each MMU it has to have a separate split of intake air. In your presentation and your comments back to us as to why you think that's, you know, good, bad, whether it provides controls or not, if it's beneficial, that's for you to provide to us. So I'm just trying to make sure that you understand what you rule requires as opposed to what you -- what the rule would require. So, you know, from that, moving on to the next part of it is --

MR. HARTSOG: Well, Bob, well I'm not ready to move on. Let me clarify and make sure I understand. I'm a little thick sometimes. So what, so you do tell us that the purpose of that change in the rule is to make sure that you don't run two continuous miners on the same section at the same time, or that you don't have two continuous miners on the same section at the same time, which one is it?

MR. THAXTON: It's not continuous miners, it's mechanized mining units, period.

MR. HARTSOG: Excuse me, MMUs.

MR. THAXTON: Yes.

MR. HARTSOG: Substitute MMUs into that question.

MR. THAXTON: The rule is that each MMU will have to have a separate intake split. That's the proposal. The proposal also changes the definition for a mechanized mining unit. So you need to look at both of those in conjunction with each other.

MR. HARTSOG: So if I put two MMUs, let's say that I've got two continuous miners. You're making a differential between having two continuous miner machines on a unit whether or not there's, it seems to me it's defined by what a production crew is. What is a production crew under this scenario?

MR. THAXTON: That's, if you look at the definition of the mechanized mining unit you will see that it does refer to production crews that you, each MMU is if you cannot have two mechanized mining units running at the same time if you have two production crews on one section. So basically what it amounts to is that you can have two continuous miners on a section, but you cannot run them at the same time, you can't have crews that can run them at the same time, then they become separate mechanized mining units.

MR. HARTSOG: What defines a crew?

MR. THAXTON: That's where we said if you're able to run the continuous miner then you have people that can run at the same time. You can't do that. That's, the definition says you can't have both those machines able to be run on one mechanized mining unit. So the proposal is, that's why we say in the proposal you need to look at the definition of mechanized mining unit as well as this wording in 75.332 that the only thing that was added to 75.332 was mechanized mining unit, so that you make your comments in relation to what the proposal actually has in it.

MR. HARTSOG: So if I send the crew up there that has a continuous miner operator and let's say one of the buggy runners can operate the continuous miner, I've still got two operators. Does that, the proposed regulation doesn't say anything about what constitutes a crew.

MR. THAXTON: Well if you're, if you have a buggy operator then it's a buggy operator. If you have two continuous miner operators up there where you can have one assigned to each machine then that's essentially two production crews, you're running the both miners. That's what the definition of the MMU goes towards. 75.332 goes to providing the intake air to each mechanized mining unit. So that's why I said you need to look at both of those items together, not separately.

DR. WAGNER: I don't think he's saying that your comments were not, weren't relevant, I think that all he wanted to do was to draw your attention to this definitional things, and I'm not sure it's going to change your comments at all and he wasn't suggesting that you change your comments. It's that when you do it, understand the MMU definition and the specifics of the proposal with respect to those.

MR. HARTSOG: With all due respect, that's what I'm trying to understand so I can make proper comments.

MR. THAXTON: Just a follow up question then in relation to the mechanized mining units in relation to your saying that 100 MMUs then would essentially be inoperable -- 100 would with your projected 200 right now. How many entries do you see in a supersection on operating two mechanized mining units with two continuous miners with a split ventilation?

MR. HARTSOG: Well we have clients, oh, with split ventilation and operating them simultaneously?

MR. THAXTON: Yes.

MR. HARTSOG: Can be anywhere from 5 to 14.

MR. THAXTON: Entries with two machines on split ventilation?

MR. HARTSOG: Could be.

MR. THAXTON: Okay, we have not seen anything in ventilation plans, where it limits it to 5 entries for the most part. And I'd say majority of the times when we have supersections with split ventilation with two units it's usually 10, 12, 14 entries going across with one MMU on each side, split ventilation handling 7 or 8 entries on one side and then the balance on the other side. Is that normally what you would see?

MR. HARTSOG: No, but that's fine, go ahead.

MR. THAXTON: The only question I had was, when you say 100 MMUs would be unable to work with your scenario, given that if we have a lot of units with ventilation like that, supersections, if there are 12 entries, 12 to 14 entries wide, would you expect a single mechanized mining unit, one continuous miner to be able to operate in that kind of situation?

MR. HARTSOG: It may.

MR. THAXTON: The stretch cable and car to extend over 14 entries?

MR. HARTSOG: Depends on the situation.

MR. THAXTON: Generally would you expect a mine to be laid out that way?

MR. HARTSOG: Don't know, have to look at the mine.

MR. THAXTON: Okay. As far as efficiency would you expect them to want to travel that far and all of them tram that much?

MR. HARTSOG: Again it depends on the situation.

MR. THAXTON: Okay. If you would when you're providing your comments, if you can express how the MMU in a section would be impacted if it dropped to only one mechanized mining unit operating on it, how that would be done, and what's the likelihood that they would maintain that same 12 entries or 14 entries, how many entries as they proceed to maintain it with the one operating unit?

MR. HARTSOG: I could do that in a better light if you could explain to me why that number of entries is the concern.

MR. THAXTON: It's just a lot of ventilation plans that are submitted in multiple areas of the country that's what they have in them. So I'm just saying if you're going to address it, you know, it would be good since you're addressing it from this standpoint of representing the Association if you would try to address that for the majority of the

operations which we see with 12 to 14 entries.
Thanks.

DR. WAGNER: I have no questions for you.
Thank you very much.

MR. HARTSOG: Sure.

DR. WAGNER: We're next going to turn to Dr.
Tony Cox.

MR. KOGUT: Thanks first of all for the
comments you made about the noble aspirations of risk
assessment, you know, apart from how well it may have
succeeded in meeting those aspirations. In your
estimation does the weight of the existing
epidemiological evidence support the proposition that
reducing exposures would significantly improve the
risk of respiratory disease, pneumoconiosis and
emphysema and premature death?

DR. COX: Yeah, I think all of the available
epidemiological evidence is consistent with the
conclusion that reducing high levels of exposure
protects worker health. But I think that the
epidemiological evidence is ambiguous on the effects
of reducing low levels of exposure.

MR. KOGUT: And that's because of the idea
that there might be a threshold?

DR. COX: Both because there might be a

threshold and because of problems in how measurement error and exposure misclassification error have been handled. I think at sufficiently high concentrations you can see effects, concentrations and durations, but at the levels that we're now starting to talk about I think that it's not clear what was caused by high exposures that were attributed to lower --

MR. KOGUT: Right. And I also appreciated the comments you made about the hazards of looking at averages rather than distributions of exposures, and I would like to have you clarify a little bit about which distributions you're talking about. Because one of the aspirations of the risk assessment I thought was precisely to stratify the analysis, not to get rid of averages entirely but at least stratify the analysis into clusters of similar work locations that would present similar risks to miners at the exposure levels experienced in those work locations.

DR. COX: Yeah.

MR. KOGUT: So it's stratified by occupation and also I think more, well I mean that's part of the distributional issue, but within the occupations it was stratified by this notion of recurrency class where exposures in the highest recurrency class were much greater than in the lowest recurrency class. And the idea there was without looking at each work location individually to at least group the work locations into clusters that presented similar risks so that the average within that cluster of work locations wouldn't be so terribly misleading.

DR. COX: Right.

MR. KOGUT: And that was the attempt anyway, and I think that at the end these different within occupations the different work locations and rank of coal were integrated back together by taking a weighted average of the prevalence of the different types of work locations. But the intention there was to address the distributional problem that you're thinking of, at least across work locations. Now are you saying that that was not adequate to avoid the problems of averaging or were you saying that within a work location that we shouldn't be looking at the average that we expect for a particular miner within a work location but looking at excursions, day to day excursions and variability in what that miner experiences over his or her lifetime?

DR. COX: Yes, so I'm saying both of those things. One is I think that the report does a good job of laying out the problem, and I think the report often does a good job of laying out the problem, and I think the report, QRA, also does a good job, and I think that means you did a good job, of stating the assumptions that you're going to use to try to deal with these problems.

But where I have real concern is I don't think that this well intended clustering actually does solve the problem of producing homogeneous risks. And my basic reasoning is based on the idea, it's very similar to residual confounding, which is you do the best you can to put things into homogeneous groups but until you look at the remaining heterogeneity and overlap and misclassification error, all you've done is rearrange deck chairs on the Titanic.

You're not actually getting at the issue which is, other things being equal, so everything that we see being equal, it's the people who have much higher than estimated exposures, cumulative lifetime exposures in any group who are disproportionately at risk compared to the average individual in that group. So I think that's the crucial question. I think both of the points that you touched on, saying are you saying this or are you saying that, and my answer is I'm saying both.

MR. KOGUT: Okay. You, also one of the things you pointed out was that there was no real hazard identification section in the risk assessment. And I think in a, you know, moving on on page 3 it addresses a similar criticism from OSHA, that the reviewer from OSHA made a similar comment and my response to that comment was that the hazard identification was really contained in a separate section, the health effects section of the notice, the NPRM, the notice of proposed rule making. So did you have a chance to look at Section 3 of the notice and does that health effects section in the notice qualify as a hazard identification section?

DR. COX: I'm having a real difficult time hearing.

MR. KOGUT: Oh, sorry. Okay, so the question is whether the hazard, whether the concern about the risk assessment not containing a hazard identification section, whether the health effects section of the notice, which is Section 3 of the notice, whether that would qualify as a hazard identification section or were there some things lacking in that?

DR. COX: Yeah, I was retained to really review the QRA itself, and so I only looked briefly at the supporting documents. But I think that the real question is, where is the hazard identification for current and projected future levels of exposure. And if we take the idea of thresholds seriously then it's not enough. I think we would all agree that there have been dangerous past levels of exposure and we see it in worker lungs, so I think there's no question about that. The question is have we harvested the low hanging fruit, is there a remaining hazard for the levels that we're talking about.

MR. KOGUT: Right.

DR. COX: And that's the part that I didn't see within the QRA.

MR. KOGUT: Let me just correct myself, because I said Section 3 of the proposal, the health effects section is actually Section 4.

DR. COX: Yeah.

MR. KOGUT: So that's where the intention was that the hazard identification would be contained in Section 4 of the proposal. And as I'm sure you're aware the intention of the third section of the risk assessment was precisely what you just said. Maybe it didn't succeed as well as you would have liked, but the idea was to project the risk based on the existing epidemiological literature and then the exposure response curves in that along with some assumptions of how the rule would or might impact or affect the actual exposure levels in the future, and then subtract, by subtraction, you know, do a projection of what the effect of the rule was. So that was the intention.

DR. COX: Right, and again I think it's the right intention, but I strongly question the subtraction method because I think that there are very many difficulties in subtraction, one is that you can easily end up attributing risk across multiple factors to add up to way more than 100 percent. So I think that there's a good statement of what we're trying to do and a clear statement of how we tried to do it, but I think what's missing is, so do we succeed in doing what we were trying to do.

DR. WAGNER: You started your presentation saying that the standard is going down but lung disease is going up, that was a statement that you made.

DR. COX: Depending on what time intervals we're talking about. I think I started by saying that both have gone down and if you regress one trend against another you're going to see a positive correlation between them but that's not a good thing to do.

DR. WAGNER: Actually something I wanted to remention that I did before, the standard actually hasn't changed since --

DR. COX: 1970 --

DR. WAGNER: 1 or 2, I think after --

DR. COX: Yeah.

DR. WAGNER: So the standard really has not been going down. Reported dust levels have been going down.

DR. COX: Yes, thank you.

DR. WAGNER: You noted that there does appear to be some continuing risk of lung disease.

DR. COX: Yes.

DR. WAGNER: Under current conditions.

DR. COX: I don't know about --

DR. WAGNER: You mean --

DR. COX: Under some conditions that are now bearing fruit in terms of increased lung disease, yes.

DR. WAGNER: Okay, so with any chronic disease could you ever say that, at any particular point would you be willing to say that lung disease reflects current conditions, or a chronic disease with latency?

DR. COX: I think a chronic disease with latency is a more accurate description.

DR. WAGNER: Right, so a chronic disease

with latency, would you ever be willing to say that the disease that we're seeing today is because of today's conditions?

DR. COX: No, I don't think I would ever say that COPD for example that's occurring today is caused by today's or yesterday's exposure level, I would never say that.

DR. WAGNER: Right. So which conditions should we be looking at in order to explain the disease that we're seeing today?

DR. COX: Yes, so I think, here's the alternative hypothesis, to find a beat. Is it the case diseases that we're seeing today are caused by very high levels of cumulative past exposure, yes or no? Well to answer that question we're going to have to use perhaps radiological or other methods and say who's getting diseased and what kinds of exposures did those people have? And we may know a lot about the average exposures in the work places that their job histories put them to, but what's relevant is did they get many times more than the average level of exposure?

DR. WAGNER: So you referred a number of times and I think by implication here that on the one hand we have a standard that establishes a dust limit, it establishes an enforcement scheme, sampling strategy, X-ray surveillance, other particularities of the current standard, that's on the one hand. We have a current standard as currently enforced. We also currently are seeing people with disease that many people on the panel acknowledge is as a result of their workplace exposures.

DR. COX: Perhaps in combination with smoking and other variables, yes.

DR. WAGNER: Some of the people that we're seeing, in fact more and more as it's 2011 instead 1980, more and more people that we're seeing today are people who have worked their entire working lifetime under the current standard.

DR. COX: Yes.

DR. WAGNER: What's been done to change the current standard since the early 1970s?

DR. COX: I don't know that there's anything, why?

DR. WAGNER: So what we're seeing is people having disease under the current standard.

DR. COX: Yes, but --

DR. WAGNER: So what recommendations would you make in terms of reducing probability of future disease, what recommendations would you make that would change the current standard?

DR. COX: I am not sure that I would make any recommendations to change the current standard in order to reduce disease. I think that we have to understand what's causing the disease, where it's coming from. And if it's coming from higher than permitted by the standard exposures or exceptionally high cumulative exposures that are multiples of the average exposure, then I would work on reducing that upper tail, that high variance.

DR. WAGNER: And how would you suggest that be done?

DR. COX: I don't know today.

DR. WAGNER: When dust sampling is being done, at least in theory the dust sampling should be done in order to reflect the normal working conditions that a miner experiences so that these -- why exposure -- because you would like a standard -- if a standard is health based in order to protect miners and the dust limit reflects the best thinking about the level of chronic exposure to which a miner could be exposed for a working lifetime without suffering material impairment of health --

DR. COX: But we don't know.

DR. WAGNER: We don't know what?

DR. COX: We don't know what level a miner could be exposed to for working life without suffering material health. One hypothesis is that the level equal to the currently permitted average if indeed that's all that one ever perceives would be fully adequate to protect worker health.

DR. WAGNER: Okay, no and I'm not disagreeing with what you're saying. You're also saying that it's at least a reasonable hypothesis that you've been putting forward that the diseases being seen is as a result of exposures taking place under the current standard that are higher than the current standard.

DR. COX: Yes, the phrase I've been using the last few minutes is multiples, maybe 5 times, maybe 10 times, but multiples of the average exposure, simply because what we're not tracking is the variance of exposure around the mean. And if you think of an enormous bell curve rolling forward with the mean always accumulating more and more, by golly the variance is accumulating more and more too, you're getting a wider and wider spit. My hypothesis is that it's the people at the upper end of that distribution who are contributing disproportionately, and perhaps exclusively, to the cases that we're seeing.

DR. WAGNER: So what are your recommendations for cutting off that high end tail of the rolling bell curve?

DR. COX: I appreciate that you've several times asked me that question which I interpret as, well what's the right answer?

DR. WAGNER: No.

DR. COX: Okay, I wish I could give you a good recommendation for how to bring that down, but to do so I would have to understand details of what contributes to the variance and I don't have those details.

DR. WAGNER: Have you done studies in other workplaces that are non-mining looking at variance in exposures?

DR. COX: Well yes, sure.

DR. WAGNER: And do you have thoughts as if there are other circumstances where a threshold would be desirable to keep exposures below, how in a non-mining environment might you go after reduction of the intermittent high level exposures in order to reduce the likelihood of disease?

DR. COX: That's a great unflagging question but I'm not prepared to answer that, I don't know the answer.

DR. WAGNER: Do you feel that it's likely that there is an exposure response relationship in theory, I understand that you have criticisms of the exposure response relationships that have been put forward in the literature, do you think in theory that there could be an exposure response relationship established for the respiratory effects of coal mine dust?

DR. COX: Certainly, yes.

DR. WAGNER: And how would you determine whether or not the threshold that your hypothesizing, how would you either support or contradict that hypothesis?

DR. COX: I think, and I'm sure you appreciate but let me clarify that what I'm prepared to answer questions about is just the QRA and my comments on the QRA. But stepping outside of that for a moment, I think if we were to reanalyze epidemiological data using the hypothesized threshold, which might not be totally sharp by the way, but using that hypothesized threshold as a parameter to be estimated from the data using statistical techniques such as the EML algorithm, I think that would probably give us what we need to know. So -- well, I'll stop there.

EML algorithm, also a technique known as data augmentation, these are computational statistical methods that acknowledge that there is something that influences what we see that we can't measure directly but that we can assess for consistency with the things that we do measure, and I think that those techniques are very appropriate in this context.

DR. WAGNER: So to be clear, you've suggested not using historical exposure data to characterize risk, is that correct?

DR. COX: Not precisely.

DR. WAGNER: All right then that's why I'm asking, could you help me understand what you are suggesting?

DR. COX: Thanks for the opportunity to clarify. I am suggesting strongly that regression analysis of past trend data not be used as the basis for extrapolating risk, okay, that's the wrong tool for the job. I think the right tool for the job consists of various forms of causal analysis. Now if you say, well what forms of causal analysis? For time series data I would begin by looking at what's called Granger Sims analysis, which says what's the information of one time series, let's say exposure, provides back another, let's say disease, above and beyond what the past history of disease itself. So I would look for that information bearing content of the exposure time series.

For non-time series data, for cross sectional data, I would use what are called conditional independence tests for causality to say, well if we've got the right culprit here, if it really is this amalgamation of exposures that's causing disease, then the conditional probability of disease given our exposure estimates and all the rest of the data should be the same as our conditional probability of the disease just given our exposure estimates.

That's a testable condition and conditional independence tests of a statistical technique used to test that kind of hypothesis. So I do think that past data that relates exposure levels to disease frequency is very relevant, but it's the causal part of that and not the trend regressions I think is relevant.

DR. WAGNER: Good, thank you. Maybe you could pass the microphone on to Bruce because I had something to ask him about what you've been talking about. Bruce is the lucky winner.

MR. WATZMAN: Say what? Yeah, you just stay right here, Tony.

DR. WAGNER: So I believe that a hypothesis that Tony put forward is that under the current dust standard disease may be explainable by multiple significant excursions above the current standard, the current permissible exposure standard. Is that, yes, Tony's saying that I've got that right.

DR. COX: Yes.

DR. WAGNER: What do you think about that hypothesis?

MR. WATZMAN: Well in fact if memory serves me correct when the advisory committee was appointed by the Secretary of Labor to look at how we eliminate coal worker's pneumoconiosis this is in fact one of the things they looked at. Are the dust samples, is the current system representative of the dust exposures that miners receive over their lifetime and can we use that as a predictor? And I think the advisory committee said, no they're not.

It's not my work but it's others' who if memory serves me correct I think the number, Greg, is somewhere in the range of 8 to 12 percent of the, you know, if you look at a miner's work history the current sampling system is such that you only are sampling them 8 to 12 percent of their working career. And I could be wrong on that but that's it just sticks in my head.

So, you know, I think there is a very valid question here as to whether or not the exposures we've seen today are predictive because they don't really represent the full exposure of the miner's working career. And that was a change that was done years ago, I mean, you know, we have no way of tracking.

DR. WAGNER: So just to be clear the exposures that are measured and reported by the operators and by MSHA inspectors may not be reflective of the actual exposures that miners are experiencing, is that what you're saying?

MR. WATZMAN: I think most people would agree with that.

DR. WAGNER: And what would be the cause of those nonrepresentative samples?

MR. WATZMAN: You know, it's just, I can't quantify exactly what the causes are. I mean there are changes in the production methodology, there are changes in ventilation controls underground, you know, maintenance, you know, let's not shy away from it, I mean, you know, for optimum dust control, you know, it's required that you ensure that ventilation controls, that water sprays are being operated at their optimum levels.

And we're working in an ever changing

environment, a very fluid and dynamic environment where, you know, you can't assure that 100 percent of the time day in and day out. That's not to say that I'm sitting here saying that operators are ignoring those because I don't believe that's the case. I think operators do the best job they can ensuring that they are maintaining the integrity of their ventilation controls and their other means of reducing or minimizing dust levels underground.

DR. WAGNER: So what I understand both you and Dr. Cox to be saying is that the samples that are being taken, reported, may not reflect the exposures of any individual miner at this time?

DR. COX: What I'm saying is that there's variance around the mean.

DR. WAGNER: Right.

DR. COX: And we don't directly measure or observe or track that variance for individuals, and some individuals by luck of the draw for whatever reasons known -- and some of which Bruce may have alluded to, some individuals are going to have way more exposure or the same estimated exposure than others. It's a statistical certainty.

DR. WAGNER: So then back to Bruce, if you can help us understand on those statistically certain miners that by the luck of the draw are going to be exposed repeatedly and to excess, what kind of a scheme would best protect them?

MR. WATZMAN: Well I think that's the question that we're grappling with right now quite honestly. And as I indicated early on, you know, we recognize that there is a problem that needs to be dealt with. We don't agree with you as to the breadth of the problem if you will, we don't think that it is a problem that exists across the entirety of the industry and warrants the solution that you have proposed. But as we continue to analyze what we think is the problem we will be coming back to you before the end of the comment period with an alternative which we think addresses the problem.

I mean I hope that we can continue to have dialogue. I know that oftentimes the agency has felt shackled that we can't have dialogue with stakeholders during the pendency of a rule making. I can tell you there are other agencies that we deal with that do just that, and I hope that this agency would follow that course of action. We are dealing with a whole host of regulations across the Federal government.

And meeting with Federal regulators, Federal enforcement agencies, regulatory branches, during the pendency of those rules or consideration of those rules, it's not the exception, I mean that happens day in and day out and we need to continue to have this dialogue. You know, you sitting there and us sitting here and sparring with one another isn't going to get us to where we need to be.

DR. WAGNER: I actually don't consider it sparring. I actually, as we talked about in the hallway I think that you and those that you've brought here have been providing exceedingly valuable information. I do hope that when you move forward with your written comments that you help us not only look at the past but also think about how moving forward we protect all miners from the statistical inevitable intermittently excessive exposures, how do you do that, in order to not have people talking 20 and 30 years from now about, you know, why didn't they do it right 30 years ago. Let me just see if there were any other questions for Dr. Cox before we move on. One last thing, you talked about action levels I think. You did, I wrote it down so it must be true. I believe you talked about action levels.

DR. COX: Okay. Oh, yes, I probably did as a matter of fact.

DR. WAGNER: Okay. Could you elaborate a

bit on your concept of action levels?

DR. COX: I suspect that I referred to it in the context of saying if we're going to understand the effects of single shift sampling we need to quantify what are the likely effects on type 1 and type 2 error, I'm thinking that's the probable context. Then word "action level" comes from an old 1950s technique, the sequential probability ratio test, the idea of which is you keep sampling and if you cross a certain line you stop sampling and say, we're out of control, we need to do something about it. And if you cross a lower line you breathe a sigh of relief and say, well maybe we can stop sampling or sample less often.

And if you haven't crossed either of those decision thresholds you keep on going. Now that particular nice division of the decision problem into stop and intervene, relax you're in good shape or keep watching because you're not sure yet, relies on a bunch of specialized assumptions, I doubt that it would carry over neatly and cleanly into this environment. But something along those lines where we trigger actions under conditions and in such a way as to pursue a goal of minimizing the costs of type 1 and type 2 error, that's what I was advocating.

DR. WAGNER: Great, okay well that's what I thought you were talking about but I think it would be particularly helpful as you finish preparing your written remarks to think about how that might translate into future industry and agency behaviors in order to be able to reduce risk of disease.

DR. COX: Thank you, I'd love to because I think it involves all those issues of distribution and variance and so forth that we've been talking about.

DR. WAGNER: Good, thank you very much. Very good. I think that you're batting cleanup here?

MR. GLENN: Yeah.

DR. WAGNER: Okay, Bob gets the mic.

MR. GLENN: I find myself being in the unenviable position of being the last chunk of red meat for the sausage grinder I think, so flip the switch and let's get it over with.

DR. WAGNER: Here I'm going to pass the microphone to George first.

MR. GLENN: I'm sorry, I'm originally from South Carolina, I don't talk like normal people.

MR. NIEWIADOMSKI: I think you had mentioned in your presentation, and correct me if this is not correct interpretation of what you said, concentrations are not causing the increase in the disease, is that what you said that early on?

MR. GLENN: I'm not sure I said, George, if I did I don't recall, but maybe --

MR. NIEWIADOMSKI: Well I think what you were referring to is that you were focusing on the silica exposure.

MR. GLENN: Right.

MR. NIEWIADOMSKI: Okay?

MR. GLENN: Yeah, what I was saying is more likely not what we were looking at with this RPCWP is silicosis, it's not coal worker's pneumoconiosis, I don't think we should fool ourselves into doing that. There are studies that could be done to determine that. As I pointed out with the Enteo study and with others, it would be not easy but it's certainly practical to do a case control study where you'd look at the cases of the workers that have the disease, match them with controls, look at their cumulative exposures for both coal dust and silica, and try and if you're interested tease out which is the etiologic agent.

My hunch, in fact I would bet you that it's silica that's the causative agent in these areas, in these hotspots that we're seeing. And by the way I certainly didn't say concentrations don't, because they do, and I'd like to amplify I think something that Tony was saying earlier. I've worked with Tony in some other situations and I find him extremely difficult sometimes to follow and, well when you've talked about mathematically modeling lung cancer or insolubly -- I mean I can understand the biology but with all of the different equations I have trouble.

But I think what we're seeing with some of these exposures, and it goes with coal workers as well, and as Tony was saying it's these extremely high exposures. When you look at a distribution of exposure data of course you have this tailing distribution where these high exposures are. And I think it's these high exposures that are taking place in essentially the same mines day after day after day, so the intensity is there and the duration is there. So I think we really need to zero in and not look at these means and for millions of exposure data but try and sort out where are the problems really and what can we do about those.

MR. NIEWIADOMSKI: Well let me ask you this, and I know that one of the things you've referenced was the report by, about the X-rays that were done in southwestern Virginia, okay?

MR. GLENN: Yes.

MR. NIEWIADOMSKI: And in that paper they basically indicated that the amount of progression, okay, and the short duration that they're seeing, one would have to be exposed to a concentration of 4 milligrams per cubic meter, okay?

MR. GLENN: Of coal mine dust.

MR. NIEWIADOMSKI: Of coal mine dust.

MR. GLENN: But they were exposed to three to four times the current PEL for crystalline silica.

MR. NIEWIADOMSKI: Well, PEL of what?

MR. GLENN: .1.

MR. NIEWIADOMSKI: Okay, so --

MR. GLENN: I showed the data, George.

MR. NIEWIADOMSKI: Okay. Now that data, okay, when you're talking about exceeding the PEL, three times the PEL, is that based on our data? I don't know.

MR. GLENN: That was, both MSHA data and operator data pretty much followed each other.

MR. NIEWIADOMSKI: Well but let me just say with coal mine dust, okay? Now, okay, now given that you've indicated that they would have to be exposed in a continuous basis do you think that if that's true that some of the bimonthly samples that we're getting would in fact have concentrations as high as you've indicated?

MR. GLENN: They did, evidently those were sent --

MR. NIEWIADOMSKI: Well, I'll tell you this, because in fact the states that you're talking about, Virginia, West Virginia, and eastern Kentucky --

MR. GLENN: Right.

MR. NIEWIADOMSKI: Where we have one, highest rate of our concentrations exceeding 100 micrograms.

MR. GLENN: Right.

MR. NIEWIADOMSKI: But again it is kind of important to mention that's not a new occurrence, you know, that's always been the case down there, and that's going back to the '80s and before that.

MR. GLENN: As I showed you, the Reger Amandus paper in '73 found that out.

MR. NIEWIADOMSKI: Yeah.

MR. GLENN: So we've known that.

MR. NIEWIADOMSKI: Okay.

MR. GLENN: So but we have not done anything about it. And I don't blame it totally on the agency because I looked at the industry as being responsible for providing a healthy and safe workplace, and so it's a compliance issue that the industry needs to come to grips with. And I'm not broadly saying that of all industry, but wherever these pockets are they need to be dealt with.

MR. NIEWIADOMSKI: All right, and you know that our way of addressing because we have, we said reduce dust, okay, and the intent is if you're in compliance with that reduced dust and the quartz levels percentages don't change, then you're going to be at or below 100 micrograms, that's always been the strategy.

And of course what the data that we're getting, all compliance data, and you mentioned, Bruce, that it's true that probably miners are being exposed to more dust than what those compliance samples are shown, as you all know in 1981 we changed the number of samples that operators are required to collect from 10 to 5, and the intent was that if those 5 bimonthly samples, which was every two months, the intent was if those samples are representative of what people, what miners are normally exposed to and the operator does exactly what he did when he collected those five samples, people are not going to be overexposed. And I think --

MR. GLENN: George --

MR. NIEWIADOMSKI: And I think, well let me just finish. And I think what's happening people have lost track of what the purpose of bimonthly sampling is. And basically what happens is it's just -- good samples. Because I will tell you, those concentrations out of eastern Kentucky, okay, and those areas that you've mentioned, that's where we have a significant number of low weight samples. And that's true, you know, they're not representative.

And when you're talking about eliminating these excursions, well we can't take any action because we don't see them in our samples. And so the issue becomes you said a compliance issue. Well the fact is we're enforcing the applicable standards, the operator is submitting samples and when we go in there there is compliance. Whether or not in fact that is, that's what happens when we're not there, that's a million dollar question, okay?

MR. GLENN: Yes. George, I'll need a slide for you possibly, but it was in my presentation. And this is MSHA data both inspector and operator in Wise and Lee County. For coal dust samples there were 21,000 inspector samples and operator samples of 109,000, so over 120,000. For inspector samples for quartz there was almost 6,000, 5,599, and 897 operator just because of course you subject yours more to quartz analyses.

I mean we're talking about over 120,000 and 6,000 samples. I don't need that much information to tell you whether you've got a problem. You can give me eight samples on a job and I can apply Bayesian statistics and tell you whether or not you are having a problem. I think we've sometimes, you know, we miss our point. And it doesn't help to go back and sample the same situations where we're having compliance or something. I mean the twos and fours are probably the worst things were ever put into this program. But in my opinion, you know, you're missing the boat with that type of thing. You aren't going to cure the problem.

MR. NIEWIADOMSKI: Well let me ask you this. You know, we talked about the standard, but you had mentioned how do you eliminate these excursions, okay, because that's what you feel is really the reason why we're seeing this rate of disease.

MR. GLENN: No, they aren't just excursions. They're that --

DR. COX: Long term cumulative.

MR. GLENN: Exactly, on that leg, that skewed distribution out there, the exposures are extremely high and they're occurring day after day in certain places. I think if you look closely, and we'll be submitting a larger report, but you'll see that some of this that's taking place is actually being driven by what's happening down there and it looks like there's a prevalence increase of CWP and such and whether it's real or not I can't tell you.

The other thing that you've done that I have difficulty in what may be happening with the prevalence increase we're seeing for CWP is you had the enhanced coal miner program and you've had the miner choice program. Now I applaud those. When I was in Greg's seat I did everything I could, or at least we did in round 4 to get that participation up. Lauren Ker didn't go along with mandatory examinations but that's what we needed. So, you know -- I lost my train of thought.

MR. NIEWIADOMSKI: Isn't the solution, one of the solutions as Dr. Wagner was asking about how do you in fact ensure that this results are representative and people are not being overexposed is continuous monitoring? Do you think continuous monitoring is, you know, when you're monitoring on a continuous basis you'll know exactly what people are being exposed to?

MR. GLENN: I think this PDM that's coming out is an extremely valuable tool because it does give you that instantaneous measurement, and as was pointed out today it can be used to modify behavior when you see that you're in a high dust or that dust is increasing you can do something about it. And I think if you empower workers with that information they will make the right decision.

I don't think it's ready for yet from what I saw from the presentation from Mark and Pete that it's ready for compliance use, but it certainly is a powerful tool and as an industrial hygienist I would like that for everything. The problem with silica for instance is we don't have a real time measurement. So in some of these situations where you have these high silica exposures in these mines, I know what I would do, and you may not like the answer but the first thing I would do is to go in there and put people in respirators, and the second thing I'd do is start twisting down the levels of exposure with engineering controls. Because with silica you don't know where the exposure is, just like with coal mine dust before this respirable dust monitor you didn't have an idea.

MR. NIEWIADOMSKI: I can't believe, Glenn, you said you would put people in respirators.

MR. GLENN: Why?

MR. NIEWIADOMSKI: I mean have you worn a respirator?

MR. GLENN: Yes.

MR. NIEWIADOMSKI: For an entire shift?

MR. GLENN: I worked for an industry where we used respirators as an adjunct to engineering controls. Because with crystalline silica as I explained, we didn't know enough what that exposure is at any time of the day, we don't know whether we're in an upset condition or not. So if we have an exposure that is above 50 percent, that was our action level, of the PEL of .1 milligrams, that was a mandatory respirator wearing area. And they wore it and they did not complain, and when I would go in those areas I would wear it.

MR. NIEWIADOMSKI: I don't have more questions.

MR. THAXTON: I only have one comment for you, Glenn, it's in relation to your analysis of the southwestern Virginia, the Wise Lee County area.

MR. GLENN: Yeah.

MR. THAXTON: Would is surprise you that in that area the quartz concentrations are actually so low that we don't actually put very low reduced standards in place and at the same time though the respirable dust samples submitted by my operators in that area are really low and really generally below 1 milligram on a routine basis?

MR. GLENN: That would surprise me because, what would you say the coal to rock waste is from those mines in that area?

MR. THAXTON: It depends on the particular mine but --

MR. GLENN: Give me a --

MR. THAXTON: Generally speaking you're looking at probably 25 percent rock.

MR. GLENN: I've heard different. But anyway even if you're looking at that percentage, if you're looking at 30 percent, and what type of rock is it, is it sandstone?

MR. THAXTON: That you don't know, it depends --

MR. GLENN: Well you should know. But if it's a sandstone it's 100 percent, so if you've got 25 percent of sandstone and if you had the admixtures in that coal dust of nuggets of silica or you're mining roof, you know, I'd find that hard to believe. I mean I'd come back and do some more sampling.

MR. THAXTON: Well, you know, MSHA samples every quarter, NIOSH has been in there to sample the same areas. We're all finding the same thing. So it's basically in those areas we are not finding high enough silica content to, where you said if we were triple --

MR. GLENN: Right, you're not, you're not now, and that's shown on this data. But the disease takes 10 to 20 years to develop, and back in this point when these people were exposed they were two to three to four times the PEL. I mean it didn't happen yesterday from exposure, Bob, or last week or last year.

MR. THAXTON: Okay, but like is it --

MR. GLENN: I mean is that your understanding of the chronic nature of silicosis?

MR. THAXTON: And realize we're looking at combination of silica and respirable, it's coal mine dust is --

MR. GLENN: Yeah, and it's silica is forming --

MR. THAXTON: We don't look at silica by itself other than --

MR. GLENN: Silica is far more -- you do look at, you do.

MR. THAXTON: We look for adjusting the standard, but we count it as respirable coal mine dust.

MR. GLENN: You use a formula 10 over percent quartz by 2 -- not by, 10 over 5 or whatever, right? Tell me what how you adjust for quartz?

MR. THAXTON: 10 divided by the percent quartz.

MR. GLENN: All right, percent quartz.

MR. THAXTON: As long as you have -- percent quartz.

MR. GLENN: So if you have 100 percent quartz the level is .1.

MR. THAXTON: True.

MR. GLENN: Right. So you're using a mixture equation to control part coal mine dust and part quartz percentages.

MR. THAXTON: Right, we adjust the standard to accommodate --

MR. GLENN: You adjust the respirable dust standard.

MR. THAXTON: Right.

MR. GLENN: Which is coal mine dust and quartz.

MR. THAXTON: It's coal mine dust that contains quartz.

MR. GLENN: Correct, and quartz. Okay.

MR. THAXTON: The historical data for that area though is that the concentrations of respirable dust are always much, very low.

MR. GLENN: That's not true.

MR. THAXTON: Yes.

MR. GLENN: Look at this publication from the MMWR. The CDC wouldn't publish this lie, would they? This shows your data.

MR. THAXTON: It's not just our data. You know, it's operator data that's been submitted. But the historical concentrations of samples from those areas are not high concentrations. As Mr. Cox was saying, he was saying multiples of exposure over the standard, not just exceeding the standard. So that's why I'm asking, do you see that kind of information there that we're exceeding on a routine basis to where it would or do you think that the samples that have been submitted really don't show the exposures that are probably causing the PMF cases and the high levels of CWP in general?

MR. GLENN: I'll tell you what I see. I see that quartz levels for a long period of 18 years had been far above the PEL and the coal mine dust levels had been about half the PEL. So I would conclude with no other information that these cases of silicosis, and that's why you're seeing R type lesions with them as well, they are not coal worker's pneumoconiosis. Now there may be some mixed disease, I'm sure Dr. Wagner might say that as well, you might have some coal macules in those lungs too, but you're going to have a lot of rounded silicotic nodules in those lungs. Sorry I got so passionate.

MR. KOGUT: I think you suggested at one point that, you know, PMF rates were being driven up by the dust levels at small mines. Could you amplify that comment a little bit and explain what the significance of that is?

MR. GLENN: Yeah, one study definitely showed that, presented the information of it. Mines under 50 miners show a tremendous increase and a tremendous risk for both CWP and PMF compared to mines larger than 50. And in fact as I showed on the slide, interestingly in 1970 larger mines had a higher prevalence of both PMF and CWP than small mines. In 1980 they came together and they were clustered pretty tightly together. At that point the small mines really took off, these under 50, and they essentially I think it's I think a 7 time fold increase now since 1980 in PMF or CWP, one or the other.

Where if you look at the mines outside of those less than 50, the PMF drops or goes up slightly, it's probably not statistically significant, and PMF continues to drop across the whole thing. So these small mines, and that's why with this data, you know, when we look at prevalence over the U.S., some of these small pockets, some of this small data may be dragging that up, you can actually see that that's influencing the, this small mine issue, because when you look at the middle of mines there, all mines together, it's in between but just slightly above the large mine.

So look at my figure and I think it's kind of self explanatory. And that came from, no that was a plot that John did, that Dr. Gamble did with the data from the study. We just did a little, took a little sharper look at it to see what was really going on.

MR. KOGUT: Did you take any look as to what -- that or what it is about the small mines that would account for that?

MR. GLENN: No, and it wasn't assessed in the study either.

DR. WAGNER: So continuing with the small mines do you have any, it appears from the plot that your colleagues had presented that, we're actually back to 1970s levels of PMF in this small mines group, although there may have been more small mines back then, I'm not sure what the numbers are. But at any rate the rates look like they're about the same. Do you have any specific recommendations for the agency in how to deal with this component of the problem of lung diseases?

MR. GLENN: Again I think, Greg, that we need to start looking at the data on mine specific rather than averages, and those are the mines that we ought to, I hate to use this word with Bruce sitting here, but target, those are the ones we need to go into and find out what are the exposures. Because I'm convinced, Greg, that that's where we're having problems pretty much.

And it'll be in our large report about whether the standard is more adequate or not, but I think we just, we can do a better job for public health, and I would like to work with the agency on a strategy for that. I haven't given it a lot of thought, but it's something I can do. We did some of that within the industrial sand industry I can tell you, because in 1980 we were asked by MSHA to investigate an outbreak of silicosis in two metal non-metal mines in southern Illinois.

And there were about nine cases out of 17 silicosis and one of them was acute case and the guy died at 36 years old. That company was bought by one of our other members, Uniman Corporation. They went in, they put the workers in respirators, they started assessing dust, they cleaned up the atmosphere, they put in engineering equipment. And even for the workers that came over after that period, Greg, none of them developed radiographic evidence of silicosis, which amazed me because I thought they would have such residence in their lung that they would develop it as well. So, you know, there are things we can do. I just think we have to get a little more public health oriented perhaps.

DR. WAGNER: Do you think that sampling strategies, that sampling of exposures should be, how would -- what do you think normal production means?

MR. GLENN: I don't, I'm not sure, I'm not a, you know, a management type that deals with production. Probably more of my career is working against production than for production possibly.

DR. WAGNER: We won't explore that.

MR. GLENN: Well, that was when I was working for nerve agent in the army and I shut down an operation completely for a while because of ventilation design that I evaluated.

DR. WAGNER: Now you're a certified industrial hygienist, right?

MR. GLENN: Yes I am.

DR. WAGNER: Yeah, so industrial hygienists often oversee workplace sampling, don't they?

MR. GLENN: Yes.

DR. WAGNER: And as industrial hygienist in the workplace, if you're overseeing sampling are you trying to sample when the exposures do or don't reflect what the individuals are actually exposed to day to day?

MR. GLENN: Yeah that's a good question because, you know, really if you were doing a health study you want a representative sample, you want to sample everyone, and I still think there's some benefit especially with PDMs now that we might try that for coal miners, that we just don't sample designated, DOs or whatever they're called, and when someone takes that DO position and leaves we don't leave it there or we don't put it on a piece of equipment in an area because I've never seen a piece of equipment with radiographic CWP.

So, you know, I really think that a sampling strategy needs some -- but oftentimes we oversample. I mean we can have enough data to make decisions with, even a small amount of data as I mentioned earlier with Bayesian statistics you can tell what's the probability of having an overexposure.

DR. WAGNER: Now there are some sampling strategies that would say only sample at peak exposure because if you don't have, or peak production because if you've got it under control at peak production then you're okay.

MR. GLENN: Yeah.

DR. WAGNER: I guess that it's also a question for Dr. Cox, if you could give us your thoughts as to what normal means, and if I'm saying I want to sample during normal production, what does normal mean to you as a statistician?

MR. GLENN: Could I talk about that first?

DR. WAGNER: Yes, go ahead.

MR. GLENN: Because it brought me back to my days at University of Minnesota in industrial hygiene when -- said, you know, when you're evaluating exposure for an individual you look at all of the tasks and jobs they're doing during that day and if you can you sample all of those jobs as well because you might find there's this 30 minutes where most of the exposure is, and that's where you need to concentrate, you know, your control effort, rather than some of these other tasks.

DR. WAGNER: If we're talking about sampling of workplace and realize that a lot of the exposure may be during a day that production is just humming and there's a lot less exposure during another day that there's a lot of maintenance and breakdowns and things just aren't going well.

MR. GLENN: Yes.

DR. WAGNER: How would you want to address that issue if you're trying to keep a workplace under control?

MR. GLENN: You know, I mean if I'm looking to control the workplace and such I'd probably do the worst case. And that doesn't mean that maintenance is, you know, we find oftentimes maintenance workers have some of the highest exposures in the non-metal industry, metal non-metal.

DR. WAGNER: Sure.

MR. GLENN: Just can't assume what it'll be.

DR. WAGNER: And I wanted to know, would you like to help give an opinion as to what normal means?

DR. COX: Thanks. Not so much, I mean I'll try not to use that term in a statistical context unless I was referring to something like a normal distribution. But what I think might be useful here is the idea of extreme value distributions where we sample and notice that there are some values that are higher and others that are lower and then we try to guess, so if we were to keep on sampling what's the most extreme value that you would be likely to see and how likely is it? I think that the branch of statistics that deals with extreme values might be quite useful to component in your sampling and decision procedure. But I have to again stress that this is beyond my review of the QRA, I'm just trying to play along with you.

DR. WAGNER: Right, great, thank you very much.

DR. COX: Yep.

DR. WAGNER: Did anybody else?

MS. OLINGER: I'd just like to ask if Leah Davis hasn't already asked you to please provide copies of your presentations both hard copy and electronic.

MR. WATZMAN: We will, thank you.

MS. OLINGER: Thank you.

MR. GLENN: Let me just address one thing you mentioned about what we do looking for, Greg, related to studies because I think that's very important. And I know I sat in the chair that you sat in before you were there, and I think I fell into the trap of following the British with our coal worker studies, and I guess we could complain to the late Keith Morgan for that if I guess you would agree with that.

But in any event, you know, we got to looking at the situation of prevalence of the disease and tenure of work and such, and I think we had the opportunity and we still have the opportunity to design studies where we were really looking at cumulative exposures of individuals and disease outcomes. And I don't think we've done that. I mean as John pointed out, I mean some of the studies we're looking at now exposures were prior to 1970, and it seems like we can have a study population that started after the reduction in the standard that with thousands and hundreds of thousands of dust samples with work histories and we can actually, you know, do a quite exquisite exposure response study and determine what, you know, what we're really looking at as a threshold for development of CWP.

DR. WAGNER: But I'm just going to follow up with one last question. As we all know a standard is more than a permissible exposure limit, right?

MR. GLENN: Yeah.

DR. WAGNER: I mean a standard and certainly the proposal from MSHA is far more than a specific number that's a target to shoot at.

MR. GLENN: Right.

DR. WAGNER: Are there recommendations that you either have now or will include in your written remarks that would address things other than the exposure response and the specific numerical standard?

MR. GLENN: Yeah, I will certainly address that in my remarks that I submit and in our comments that we submit. But one of the things I see as a problem, and I think Bruce or someone spoke about it today, and that is the X-ray surveillance program. When I was there we couldn't get that participation up, it continued to fall and fall.

And we're trying to, you know, make decisions based on a very small population that might not be representative of all miners. And I think those examinations should be mandatory, not only the first exam but also the periodic exams. We essentially have, you know, we tried to put in a protocol and we have coal dust standards, we have other things that we take care of, we have a medical surveillance program.

If people fall through the cracks we've got a black lung program to catch those people. But we really need those people to participate because I think by their participation as well we could do some public health indication and that is, you know, you're going to now do spirometry, you're losing lung function, is it related to your work here, it could be more related to some lifestyle habits, things of that nature.

Secondly, when a person has evidence of CWP we know that the Part 90 transfers don't work, they just don't take advantage of it, and there's various reasons I won't get into today about that. But I think when the miner reaches category 1 and 1/1 or things of that nature so we're pretty sure that change is taking place in the chest, that we ought to do a real educational effort to try to get them to change their behavior or possibly move to another job, get out of the dust or whatever. Once they've reached category 2, because you know there's less variability about 2, I think we ought to consider some type of mandatory transfer. And I don't know all the details but those are just a couple of points I would mention.

DR. WAGNER: Bruce, I'm going to give you the penultimate remarks here. Do you have anything additional to say that hasn't already been said?

MR. WATZMAN: No. You know, on behalf of everybody here we just want to thank you. This has been a long and grueling day so far and for many of us it will go on probably for several other hours, many more hours. We appreciate the time. This is a critically important issue not only to you, to us, but most importantly to the miners. We have to get this right.

We can't afford for those who follow us 20 years from now to look back and say, they had the opportunity but they didn't take advantage and do it right, and I think that's what we're all here to do, to make sure we do it right. But doing it right has to, will result from an exchange and a free dialogue, free flowing dialogue, to better define and agree upon what is the problem and how then do we develop and put in place new systems, new practices, to address what is, you know, hopefully an agreed upon problem.

DR. WAGNER: Thank you for that. And again thanks to all of the panelists, particularly those who provided new data, analyzed data, offered their interpretations of new and existing data, and made recommendations for improvements in the direction of the proposed rule. Thanks so much for taking the time.

Just so that everyone has the order of the day, we have about a half dozen people who have signed up to speak in addition to the panelists. We're going to be calling them in the order in which they signed up, the panel will be asking questions. At the end of that point we'll be asking whether anybody else who hasn't signed up wants to make any comments, making sure that everybody who wants to talk has a chance to talk and be heard and get their concerns and questions and comments on the record. The next speaker is going to be Joe Lamonica.

MR. LAMONICA: L-A-M-O-N-I-C-A. Joe. Hello, Dr. Wagner.

DR. WAGNER: How are you, Joe?

MR. LAMONICA: Panel. It's been a long day. Again my name is Joe Lamonica, consultant to the Bituminous Coal Operators Association located in Washington, D.C. The Bituminous Coal Operators Association represents member companies in collective bargaining with the United Mine Workers of America and in public policy matters concerning coal mine health and safety, pensions, and medical care.

My coal mining experience goes back to 1963. I won't bore you with all the stops in between. It's been a long time, so. I want to thank you for this opportunity to comment on the Mine Safety and Health Administration's proposed rule, lowering coal miners' exposure to respirable coal mine dust including continuous personal dust monitors. This proposal is quite extensive and has raised a number of serious issues that need to be addressed before the regulation can be made final.

The industry takes this opportunity to modernize the enforcement of coal dust regulations very seriously because such regulations impact coal worker's pneumoconiosis, a health issue that can have serious consequences on our nation's coal miners. Federal regulations first addressed the prevention of CWP in 1970, and this is the first major revision of the regulations addressing respirable coal dust controls since then.

This revision that can now be made because new technology, properly implemented, allows us to make significant improvements in the rules. I'm going to discuss four issues raised by the proposal and then make recommendations. The four issues are the 2 milligrams per cubic meter standard, single shift sampling, recommendation 1 of the Secretary of Labor's advisory committee, and last, respirable dust control plans.

The 2-milligram standard. The present regulations are an outgrowth of a program that actually started in 1965, prior to the Mine Act of '69. There was concern in the Bureau of Mines about CWP, and so a program was started to examine -- is that better? I'll just talk into this. As I said, the present regulations are an outgrowth of a program started in 1965 at the Bureau of Mines using the experience and results of research in the United Kingdom and the United States.

That research showed that a miner's respirable coal mine dust dose should not exceed 500 milligrams per cubic meter per year. To reduce this to a more manageable number, the following calculation was made. The standard work week at that time was 250 shifts, was divided into 500 milligrams per cubic meter per year, resulting in a 10 milligrams per cubic meter per 40-hour week, or 2 milligrams per cubic meter per 8-hour day. And that was the exposure limit.

Another outgrowth of that program was the development of a personal gravimetric sampler that would be worn by the miner and mounted on the person to measure the respirable dust in the miner's breathing zone. Industrial hygiene fundamentals state that personal air sampling is the preferred method of evaluating worker exposure versus area sampling. This device is placed as close as possible to the breathing zone of the worker so that the data closely approximates the concentration inhaled.

The miner's dust exposure was then recorded on the dust data card along with the miner's name and social security number. Sampling consisted of a series of five samples to calculate the weekly exposure and daily concentration. This data then would be passed on to the agency conducting the miner X-ray program to correlate the exposure dose to the X-ray findings.

However, modifications were made to the program whereby social security numbers were no longer recorded and the sampler stayed with the occupation rather than the miner. Thus the exposure of the individual miner was no longer tracked and could only be inferred from the required more generalized measurements. The proposed rule states from the, or starts from the assumption that the 2-milligram standard is being met.

It even states, this is a quote, "MSHA and mine operator data indicate that under the existing sampling program the majority of miners' exposures are at or below the limits of the proposed rule." This assumption is then coupled with data that show some geographical hotspots where there has been an increase in CWP, and this data is then used to justify lowering the standard.

As previously noted, until the advent of the PDM we did not have any method to verify these assumptions. Proper scientific inquiry would require all of us to use the new technology to measure exposures so that any rule will be based on objective evidence. This is consistent with the proposal made by the United Mine Workers of America. These changes have resulted in a program that we believe is not representative of the individual miners' exposure and does not support the lowering of the standard. We need instead to adopt a program that determines the actual exposure of the individual miner.

Single shift sampling. It is important to note that for the health of the miner the proper measurement is the exposure based on the accumulated dose, not a single shift sample. There is no medical data that I am aware of that shows that a single sample with a concentration above 2.0 milligrams per cubic meter can cause CWP.

We are proposing a dose concept that

measures the individual miner's actual exposure rather than an estimate, all hours worked on each production shift for each calendar week of the year. The agency has proposed a single shift compliance determination based on a mathematical determination rather than a medical one, and have dismissed the dose concept in spite of the many variations in the mining continuum.

Recommendation number 1 of the Secretary of Labor's advisory committee. The proposal makes reference to a recommendation contained in the report of Secretary of Labor's advisory committee on the elimination of pneumoconiosis among coal mine workers. This is recommendation number 1 which states the following. "MSHA should consider lowering the level of allowable exposure to coal mine dust. Any reduction in the level should include a phase-in period to allow allocation of sufficient resources to the compliance effort."

I was a member of the Secretary of Labor's advisory committee, and as the report states all members of the committee affirm the recommendation. I bring this to your attention so this recommendation is not misconstrued or taken out of context. The recommendation did not advise MSHA to lower the standard. Rather, the language states that MSHA should consider lowering the level of allowable exposure.

This committee also took this position because as it also stated, in summary there is substantial evidence that either a significant number of miners are currently being exposed to coal mine dust at levels well in excess of 2.0 milligrams per cubic meter or that the current exposure limit per coal mine dust is insufficiently protective.

Despite the standard, we really don't know the exposure and we cannot assume that it is being met. We have not been able to determine individual miner exposures during the entire production process. Technology is now available, the continuous personal dust monitor that if deployed properly can achieve this important and overriding objective of measuring individual miner exposures.

Under the present regulations sampling is limited to 8 hours per shift for five shifts, six times per year. This represents 240 hours of exposure time. A miner who works 8-hour shifts five days per week for 50 weeks is working 2,000 hours per year. Assuming the miner wears the sampler for the full shift on his person, the sampler only represents 12 percent of his annual exposure.

The miner that works a 60-hour work week schedule is working 3,000 hours per year. Assuming the miner wears the current sampler on his person the annual sampler only represents 8 percent of his exposure. Now you know where Bruce got the 8 and 12. This assumes that the current sampler never leaves the breathing zone of the wearer, which is not the case when the miners rotate or switch out of an occupation during a shift.

I think the other part is that the days of the traditional 8-hour work shift five days a week ended in the early '70s when Project Independence caused the industry to have to ramp up production because nuclear energy did not fill the bill as it was slated to, and as a result nontraditional work shifts started in the early '70s. So we have yet everything continued as 8 hours of sampling five days a week, or five shifts a week, and that does not represent what the miners' exposure is, so that's the point.

The respirable dust control plan. In the late '70s the health group of Coal Mine Health and Safety Bureau of Mines came up with the idea of having each mine having a dust control plan. The reasons were simple. It took weeks for the results of dust sampling to be known as to whether the compliance had been achieved. As stated earlier, sampling was only done every six months. More importantly, the results were for a workplace that either advanced or retreated to a different location in the mine.

So the idea of having a dust control plan that contained the values of different parameters that were being used to control dust would be a surrogate means of maintaining compliance when sampling was not being done. It sounded like a good idea at the time and became a regulation. It was not perfect, but it gave the miners parameters that could be measured and measured in real time.

As time went on, the plans were required to be more detailed in order for the plan to be approved by the agency. Citations increased due to the complexity of the plan, yet there was no sampling to verify that the cited activity caused any miners to be overexposed. In actuality citations of the dust plans while dust samples are being taken remain valid even if the dust samples show that the standard was being complied with.

If an operator determined that a certain number of water sprays were needed to control dust he would put that in his plan. Knowing that these sprays would be susceptible to damage in the harsh environment they were being used in, the operator would install extra sprays so that there would always be enough sprays working for control. Problems arose when the agency would check the plan and find the extra sprays.

The operator would then be required to add that number to his plan or remove the extra sprays, a practice that's still in place today. The dust control plan is too prescriptive. Rather than being performance based, because the current sampling program does not adequately determine a miner's personal exposure the agency has relied on the plan almost exclusively.

Yet as I've stated earlier, the dust control plan approach is not perfect. The mining environment is constantly changing during production. MSHA in a recent proposed rule stated that underground coal mines are dynamic coal environments where the working conditions change rapidly and without warning. Regardless of the adequacy of the dust control plan it cannot address the issue of the miner's position in the workplace, where the miner's exposure can change significantly in the short distance of a few feet.

The agency has placed more importance on the dust control plan rather than the actual exposure of the miner. The agency has failed to grasp the potential of new technology that is now available to measure miners' personal exposure or is hesitant to replace the old with the new. The PDM if used as we have outlined puts the priority back on the individual miner's actual dust exposure rather than the surrogate means of determining compliance, the dust control plan.

The PDM empowers the miner and mine management to know what the actual exposure is in real time and how that exposure is trending. With the means for dust control in place, corrective action can be taken immediately to avoid overexposure. The proposed rule attempts to address the issues that I have just touched on, but it just perpetuates the past.

I first started taking respirable dust samples in underground coal mines in 1965, five years before the Coal Mine Act of 1969, using an instrument called the Midget Impinger. The visual mine dust in those days was unbelievable, and one can only guess that a significant concentration of respirable dust that was not visible to the naked eye.

There were no personal samplers available at that time that could stand the rigors of the mining environment and/or pass the Bureau's permissibility requirements. We were able to devise a permissible sampling pump that coupled with a cyclone and filter enabled us to promulgate a respirable dust regulation. Without the benefit of exhaustive testing we were told that we needed to launch the program. We had many failures, technical issues like pulsation dampening the roofs. But government, labor, and industry working together pressed on.

The problems were solved and the exposure to miners to respirable coal mine dust continuously improved in spite of the shortcomings of the system. The biggest shortcoming was the inability to know the dust concentration in real time, a problem that has existed until now with the introduction of the PDM. The agency has asked for comments on supplemental controls when engineering controls are not adequate to obtain compliance.

There is one control that I would like to address. Years ago when we were dealing with respirable dust control for continuous miner operators someone came up with the idea that we could utilize the canopy that was over the operator's compartment to protect the miner from falling objects or falling hazards. By making an air plenum chamber in the canopy, a curtain of filtered air could be directed over the miner operator and reduce dust exposure.

This was considered engineering control and was utilized by mine operators as part of their dust control program. Then the age of remote control eliminated the operator compartment on the continuous miner and also an engineering control to reduce dust exposure. However, another dust control device came on the scene that used the same engineering principle as the air curtain on the continuous miner.

The air curtain in this device was located in a helmet which provided a more effective air current to the miner's breathing zone than the air curtain in the canopy. The helmet also provided better safety protection than the traditional miner cap, especially for the neck area. It also provided a face shield that provided better protection for the miner from flying debris than the traditional safety glasses.

But MSHA deemed this device a respirator, which the 1969 Mine Act determined could not be used as a substitute for environmental controls. As you have probably guessed by now I'm talking about the personal air powered respirator, PAPRs. Although this device is used extensively in underground coal mines, operators receive no consideration with its usage. I could be wrong, but I don't think so. In fact I just got confirmation that neither one of these devices were in existence in 1969, that's the air stream helmet and the max helmet.

The respirators that the 1969 Act were addressing were the filter type. I think George made comment on that. The shoulder type that miners objected to wearing while working, they needed to fit tightly over the nose and mouth, which eliminated facial hair in order to get a good seal. Breathing resistance was noticeable, and increased as the filter loaded with dust as the shift wore on.

These devices made it difficult for miners to communicate with one another. Today's PAPRs provide reduced dust exposure and improved safety features over traditional equipment without the drawbacks. The air curtain principle of the PAPR is the same engineering principle that was acceptable to the agency with the continuous miner operator compartment air curtain, but much more effective from a health and safety standpoint. Standard respirators should be considered PPE and used as such. PAPRs should be incorporated as engineering systems. Do not let a 1969 definition of a respirator hold back engineering control technology.

Industry actions regarding the PDM. Bituminous Coal Operators Association Health and Safety Committee met in early 2001 to take a critical look at where we were with respect to regulations. The impact of the newly developed PDM on sampling respirable coal mine dust, the NIOSH criteria document of 1995, the Secretary of Labor's advisory committee report of 1996. From that meeting came a plan to revise the regulations. Once that plan was ready to go public we contacted the United Mine Workers of America to share our plan and invite their input.

After a lot of give and take a white paper evolved. This white paper formed the basis of a new paradigm, and it goes as follows. One, representatives of the United Mine Workers and many operators made it clear in public testimony related to MSHA's failed 2003 dust proposal that the agency and not the operators should be responsible for compliance sampling. There is a strong perception that an operator controlled system is not credible with regard to compliance sampling. Therefore mine operators are willing to cede compliance sampling to MSHA as long as sufficient safeguards are put in place.

Two, the personal respirable dust program must be considered in its entirety and not by its individual parts. The PRDP would be applicable to all underground areas of underground coal mines. MSHA will designate which individuals are to be sampled for compliance from those occupations that have the highest potential for an individual miner to be overexposed. We recommend that the individual miners in the current designated occupations be utilized as PDM wearers. After MSHA performs an evaluation of each operation it will be able to determine if additional individual miners need to be sampled.

Number three, MSHA will do all compliance sampling for quartz, Part 90 miners, and intake air, and it will audit the compliance sampling program to verify that valid procedures are being used. Any additional monitoring of personnel by MSHA will require MSHA to download the data electronically as the mine so that the mine operator and miners have access to that data. MSHA will be responsible for all aspects of the deployment and maintenance of all sampling devices under this section.

Four, MSHA will purchase sufficient numbers of PDMs for use in both compliance and monitoring determinations. MSHA will be responsible for replacement and/or refurbishing of MSHA PDMs including maintenance other than cleaning and consumable parts replacement. Mine operators will be responsible for MSHA's PDMs operational readiness and deployment. Mine operators will be required to have an adequate number of personnel certified by MSHA to administer the mine operator's responsibilities.

Five, MSHA PDM compliance sampling will be conducted on all designated occupations as determined by MSHA on all shifts on which coal is produced during a calendar week, that is Sunday through Saturday. Miners designated to wear the MSHA PDM will wear the device for a full shift. Six, the exposure limit for a week will not be permitted to exceed the dose equivalent to that received as if exposed to 2.0 milligrams per cubic meter for 40 hours per week.

If a miner worked for more than 40 hours during a week the exposure limit must be reduced to the level that would equal the dose equivalent to 2.0 milligrams per cubic meter for 40 hours. For example if a miner worked for 60 hours during a week the exposure limit for that week would equal 2.0 milligrams per cubic meter times 40 divided by 60 equals 1.33 milligrams per cubic meter. In general the exposure limit for a week would be equal to 2 milligrams per cubic meter times 40 divided by the hours of work for that week.

Seven, when conditions require reducing respirable dust standard on a particular mechanized mining unit due to quartz to a level where existing controls are not adequate to keep miners' exposure under the permitted limits, the mine operator must implement a plan describing how and under what conditions mining will continue without exposing miners to excessive levels.

After all feasible engineering controls to reduce the miners' exposure have been exhausted MSHA may approve and incorporate in the operator's plan the use of NIOSH approved self contained or powered air respirators. Once the plan has been implemented, MSHA, the operator, and representative of the miners will meet periodically to determine if continued use of the plan is necessary for protection of the miners.

Eight, because of the real time capability of the PDM, dust control plans will take on a different role in this program. The engineering control plans will identify the major dust control features in use and will be used to assist miners if they detect an unaccounted for increase in their exposure. The initial engineering control plan will be submitted to MSHA for approval.

Approved control plans will be posted on the mine bulletin board. Based on the real time results of the PDM, if significant increases and/or additions need to be made to existing ECP, the mine operator after a consultation with the miners' representatives will make changes. Once the changes have been determined to be adequate the operator will notify MSHA and post the changes to the ECP on the mine bulletin board.

Nine, mine operators may choose to purchase their own PDMs to help identify dust sources and manage exposures in a timely manner. Operator PDMs will be distinctively marked to readily distinguish them from MSHA PDMs. The mine operator will be responsible for all costs associated with the PDMs, its PDMs. The operator will be responsible for keeping data from the operator PDMs separate and distinct from data collected from the MSHA PDMs. Maintenance records will be kept on mine property and be made available to the representative of the miners.

This constitutes the white paper that we are working on in conjunction with the United Mine Workers. We, the joint BCOA UMWA Health and Safety Committee were now ready to jointly present our idea to nonmembers of BCOA and to MSHA, with the purpose in mind that we form a tripartite alliance of labor, industry, and government. This alliance would then work together to formulate a new regulation by hearing from all sides.

We presented this idea to the previous administration and got no response. We presented this idea to this administration and we got the same result. MSHA has now proposed its rule and has missed the key points of the position carefully crafted by labor and management. While MSHA has incorporated some aspects of the white paper, they have kept the existing model. Therefore the regulation does not come close to tapping the potential of the PDM.

In conclusion we recommend the following. One, MSHA begin immediately to start a multiple mine study such as the original 29-mine survey that was conducted in the '60s to assure that the PDM is ready for prime time. Mine selection should be based on type of mining and shift lengths from 8 to 12 hours. I could not find anything in the proposed rule that said that you had already conducted a survey using the PDM with presampling, sampling, and postsampling criteria. So it's spelled out, but I didn't see any study that was the, that what you proposed was the result of that study.

Two, the PDM incorporates a miner's cap lamp and battery as one unit. Cap lamp technology has made significant advances recently, resulting in a cordless device that is self contained. This allows the PDM to be reconfigured sans the cap lamp battery, which will reduce the weight but require lapel sampler. We would suggest that MSHA and NIOSH work with the PDM manufacturer to make improvements to the current design so as to make it more wearer friendly. This should be done now before thousands of these devices are manufactured and deployed in our nation's coal mines.

Three, MSHA needs to reexamine the proposal to lower the standard. The dust exposure data that MSHA gave to NIOSH for the criteria document was not representative of a miner's actual exposure due to the small number of compliance samples and the existing sampling procedures. The Secretary's advisory committee recognized that fact in the report, yet MSHA ignored that finding. The dose concept that the industry and labor have proposed essentially reduces the standard for exposures greater than 40 hours per week.

Four, MSHA needs to reexamine the proposal to base compliance on single shift sampling. As stated previously, there is no medical finding that one exposure over the 2 milligrams per cubic meter standard causes harm to the miner. The dose concept that we have put forth measures the accumulated exposure for the week every production week that the miner works for a year. It appears that MSHA is proposing occupational sampling rather than the preferred individual sampling. Industrial hygiene hierarchy of sampling recommends personal sampling over occupational and area sampling.

Five, MSHA needs to recognize that industrial hygiene also has a hierarchy of hazard control, engineering, administrative, and personal protective equipment. The proposal addresses engineering control but is almost totally silent on administrative and personal protective equipment. MSHA again fails to recognize that their exposure data underrepresents what is actually happening. We may find that based on the actual hours worked, rather than the 8-hour assumption the present data is based on, that present engineering controls are not adequate and we may have to rely on administrative and personal protective devices to a greater extent.

Six, MSHA needs to reexamine the concept of respirable dust control plan. As stated above, the

PDM is both a compliance tool and a control tool unlike the gravimetric sampler. The PDM is a control tool because it can tell you in real time if you are trending towards compliance or noncompliance during a shift. This empowers the miner and mine management to begin to take corrective action if necessary.

This ability makes the PDM the primary tool in preventing the individual miner from being overexposed. As stated previously the present program puts the emphasis on the plan rather than the actual exposure because there is no way to know what the real exposure is in real time. Now we can tell. So the dust control plan as we now know it has become outdated.

We need to now think in terms of utilizing the tools of dust control in real time that addresses the conditions in the mine at present rather than relying on a plan that is designed for the conditions present at the time it was evaluated. This approach places the emphasis on exposure of the miner rather than the elements contained in a written plan. That concludes my testimony.

DR. WAGNER: Thank you very much. I'm going to turn to the panel.

MR. NIEWIADOMSKI: Joe, my first comment is

I think that you pretty clearly articulated the four issues and your recommendation and so I just have a few questions for clarification purposes. It appears just like the previous speakers I think that you're, I want to believe you're recommending that we really don't know what miners are being exposed to and that's why we need to go out there, use the PDM, and find out what are the true exposures before we consider any reduction to standards, is that correct?

MR. LAMONICA: Correct.

MR. NIEWIADOMSKI: You also mentioned that single shift samples, and of course the proposal talks about citing on single shift results, does not cause CWP. And we agree, we never said that a single sample will. But don't you believe that by controlling exposures on individual shifts, that's a way to prevent CWP in the future?

MR. LAMONICA: Well I think it comes about naturally. Because if, again I'm working on the idea that I have a limit on my dose, and assume for the moment that we're talking about 2-milligram standards and I'm working 5 days a week, 8 hours a day, my limit's 10 milligrams per cubic meter for the week. The fact that I'm 2.2 on Monday and 1.8 on Tuesday and, you know, down the line, I mean I keep monitoring that, the device is telling me if I'm trending up or trending down.

At the end of the day it's what has accumulated for the week because it's the dose that is the culprit here, not the fact that I had an excursion on one day, that, you know, there's I think you had asked the question is there a limit. Well, if the dose limit is 10 milligrams per cubic meter for the week then obviously the dose limit for the day is 10 milligrams. I would not be a proponent of that, I'm just saying that the idea of a single shift is no longer needed because you're dealing with the dose as it occurs day to day.

We're also saying that there was, Greg, you asked the question of what's normal production. We don't care anymore. We can't predict what the hell the production's going to be. If we could, I want to tell you, you could quit that job and you could get one hell of a job out in the industry right now. It doesn't happen that way. At the end of the day we know whether we had a good day or not, okay? So we're saying we sample every day, that's the beauty of 24/7. So it doesn't matter what our production was, that's what it was, it's actual. And the exposure during that time is the actual exposure that was experienced.

MR. NIEWIADOMSKI: Given what you just said, okay, basically you would, you said you're not comfortable, that you're not endorsing that, but if we're talking about I think what you're recommending is that we shift away from sampling occupations and sample individual miners since we have this particular tool. If that's the case, okay, then if you said that we should be enforcing a weekly dose, and the way we define that is, is our weekly cumulative exposure, I mean that's basically which is comparable to what the white paper recommended. If that particular miner, of course a miner if you're sampling individual miners, if that miner was going to work one shift you basically would say it would be, okay, if he's only working one shift a week then it's okay for him to get his weekly dose in one day. Would you agree with that based on that concept?

MR. LAMONICA: No, that's ridiculous, that's just absolutely ridiculous, it isn't going to happen.

MR. NIEWIADOMSKI: All right, so you're opposed to, I mean would you set any particular excursion limit? Because I've asked that question to a previous speaker, but would you in fact set some sort of a maximum exposure limit in a day?

MR. LAMONICA: No, because, you know, if

there is one I think it would have to be determined by medical evidence. And to my knowledge there is no medical evidence that shows any excursion for one shift or 8 hours of whatever number you want to pick is harmful to a miner's health. But for all practical purposes if we got our controls in place and we have the PDM and it is the best control tool that we have, you're not going to get those kind of excursions, I just can't believe that a miner would subject himself to that. What the hell would be the motive? We're talking about the miner being empowered here, and that's the big difference.

MR. NIEWIADOMSKI: Thank you, Joe.

MR. FORD: Mr. Lamonica, you talked about the power of using the CPDM and how that information downloaded to MSHA would be very valuable and MSHA doing the sampling. But you also talked about mine operators could also buy CPDMs and can do their own sampling. Wouldn't it be also valuable to require that any sampling done by mine operators also be sent to MSHA from the CPDM?

MR. LAMONICA: Realize that that was part of the white paper and we put that together a long time ago, okay, and now we're dealing with the proposed rule. But I, we still go back to the idea that it would be better if MSHA, NIOSH, representatives of miners, and representatives of the mine operators sit down together and put together a program. I'm not saying that everything that's in the white paper is the way it should be, that was our idea based on the thinking at that time.

But we found out in negotiating with the United Mine Workers, believe me we did not come to that paper easily, there was a lot of give and take. But the point was we sat down, we talked about it, and we worked it out. We think that we could do the same thing with a, and that's why we came to the agency, for that purpose. And, you know, if there's rules about regulations in the process, I mean it's ridiculous, get rid of the damn things, let's get back, and I think Bruce said that there's a lot of this communication going on now and that's the way it should be.

It should be, you know, we've got to understand your problems, you've got to understand our problems, the union's problems, the labor problems, manufacturer problems, and then work together and come up with a solution and I think we can do that. That was the spirit when we first implemented the dust regulations back in 1970. Violations weren't even talked about then. We knew that there was a limit but we were working just as hard on putting together a program as we were working on solutions to dust control.

So and I would hope that we could recapture that spirit again because we've got a tool now that, I mean I heard a lot about what some of the problems are. We had those kind of problems with the gravimetrics, and the complexity of a gravimetric compared to the complexity of these PDMs, I mean there is no comparison, this is a totally different animal. But we can overcome those problems. We're a hell of a lot smarter now.

MR. FORD: Thank you. Also you talked about PAPRs, air streaming helmets that perhaps should be included in the rule. Could you discuss or at least talk about some of the problems at least that miners have said about using PAPRs, one is that they're very heavy and they cause neck problems, and also that like miners maybe on long walls are always, the PAPRs has a shield, an air shield that goes over the front, and they're always taking that shield and pushing it up because it's always getting dirty, stuff splashed on it, so how protective can the miner be when he's always pushing up and down that shield?

MR. LAMONICA: Well, several ways of trying to answer the question. One is that if you took, if you tried to take away those devices from many miners they would fight you for it, okay? But I think that if it was accepted as a control, engineering control, because of what I went through with the design of the device, it's engineering control that existed back in the '70s, if we could accept that as engineering control then we could move forward with improving the PAPRs.

That, we're still talking about a generation of PAPRs that existed back in, I believe the air stream came out in the late 1970s, and the masks came out shortly after that, the early 1980s, but there's been no improvements because there is no market, there's no, for the manufacturers to come up with something different the market isn't there. We could create that market if this turned out to be an acceptable engineering control.

MR. FORD: Thank you.

DR. WAGNER: I was just checking the Secretary of Labor, the report of the advisory committee that you were on, the Secretary of Labor, concerning the use of air stream helmets and there was kind of a lengthy finding here about the investigations that you did, the lists that you made, and I just wanted to note that recommendation number 4 from all committee members was that environmental control measures should continue to be the primary means of maintaining respirable dust levels in the mine atmosphere in the active workings in compliance, respiratory protective equipment should not replace these control measures but should continue to be provided to miners until environmental controls are implemented that are capable of maintaining the respirable dust level in compliance. Administrative controls should only be utilized in situations similar to respiratory controls as interim control measures while environmental controls are being installed. Has there been anything that's happened over the last 15 years that would change that belief?

MR. LAMONICA: Greg, that's, to me that is just going back to the thinking that was contained in Title 2 of the Mine Act. Title 2 of the Mine Act was a interim mandatory health standard. Last time I checked interim meant temporary. That's been in there since when?

DR. WAGNER: Yeah, then you noted also in the report that it could have been changed. I thought that the recommendation that I just read wasn't based upon the current regulations but it was a recommendation to the Department as to what should be done going forward, that it was forward looking not backward looking. And so I mean it was an honest question, are the helmets that we're seeing now consistent with those that you observed when you were on the committee 15 years ago and when that recommendation was framed?

MR. LAMONICA: I haven't seen any recently, but it's my understanding that the design has not changed that much.

DR. WAGNER: You mentioned first that in the committee deliberations you kind of came to one of two conclusions that either the 2-milligram standard wasn't being followed or that the 2-milligram standard was inadequately protective, or I mean I think there's probably a third path which is that it is being followed but in the aggregate that it's not just the 2 milligrams but that the aggregate of other things having to do with the comprehensive standard may not be in total adequately protective. Have you over the last 15 years, you know, observing the information that we currently have about lung disease in miners, have you resolved where on that spectrum your own feelings are?

MR. LAMONICA: I still think that the sampling program is not representative of the miners' exposure.

DR. WAGNER: Okay, and that the conclusion from the rest of your, what you told us is that appropriate use of the CPDM would take care of that issue?

MR. LAMONICA: Yes.

DR. WAGNER: Great. If no one on the panel has additional questions, I want to thank you for your presentation today, I appreciate your being here.

MR. LAMONICA: Okay, thank you all.

DR. WAGNER: The next speaker is John Gallick.

MR. GALLICK: I think I'm done knocking over everything going getting up there. You ready?

DR. WAGNER: Yes, thank you.

MR. GALLICK: Okay. My name is John Gallick and I am the Vice President of Safety for Alpha Natural Resources. Alpha is the third largest coal company in the United States with affiliates operating 60 mines in Virginia, Kentucky, West Virginia, Pennsylvania, and Wyoming. These affiliates operate approximately 68 mechanized mining units, many of which are set up as supersections. Thank you for this opportunity to comment on the Mine Safety and Health Administration's proposed rule, lowering miners' exposure to respirable coal mine dust including the use of the continuous dust monitors, or CPDMs, and I'll probably say PDM more than I will anything else.

I intend to limit my public comments to discussion of the practical effects that this rule if unchanged will have on our operations. I plan to submit written comments on suggested changes or rewrites needed to make this proposed rule a workable regulation that achieves the intended goals while providing a system within which coal workers can continue to produce.

I'll address the following issues. Some history of the efforts to develop a practical working framework for implementing CPDMs into the respirable dust regulatory scheme, and areas where the proposed regulation fails to recognize performance driven options that allow an operator to achieve individual worker protection without inhibiting production or actually shutting down of operations.

The history of the development of CPDMs implementation. This was obviously going to back up on some things Joe said. I was a member of the industry team that began to work on how to take full advantage of a PDM and how to outline a regulatory platform for the eventual implementations of PDMs. This team also worked with members of the United Mine Workers of America in eventually developing what has been labeled the BCOA white paper.

Unfortunately while the efforts to develop a workable model for PDM usage within various groups of operators and with the UMW with an open and free exchange of ideas and concepts, MSHA's legal opinion regarding and concerning the 2003 record precluded MSHA involvement in these give-and-take sessions. While we eventually shared with MSHA officials our working documents setting forth our thoughts on a regulatory platform, including several members of your panel, this exchange was limited to a presentation rather than an exchange of ideas.

Maybe this barrier has created a misapplication of our ideas in the proposed rule. While the entire document published in the proposed regulation was discussed by Joe Lamonica, I will address some of the thinking that went into the practical application of the PDM that was developed in our joint industry labor working group sessions.

In my opinion the key to the implementation plan was, one, a weekly dose concept where samples would be taken each day and the total weekly dose of each individual would determine compliance. Two, the use of personal sampling systems where individuals designated by MSHA as working in the high risk position would wear the PDMs each shift. Compliance would be based upon the individual's personal sample results and not the artificial area samples that is now the standard.

Three, the exposure limit for a week would not be permitted to exceed the dose equivalent allowed for a 40-hour work week regardless of the number of hours in excess of 40 hours worked by the sampled miner. If the miner worked for more than 40 hours during a week, exposure limit would be such that the extended weekly hours would result in a practical reduction in the employee's dosage rate per hour for maintenance of compliance.

Four, since the PDMs provided real time measurement of respirable dust exposure, the complexity of respirable dust control plans could be reduced so that operations would be measured by actual results and not violation of a particular section of a respirable dust control plan. These simple sentences do not by any means reflect the amount of discussion back and forth that went into our industry labor group work product on how to best implement the PDM in a regulatory structure.

As I stated earlier there were other segments to the plan for PDM implementation that will be discussed by other presenters or added to the written record, and Joe has discussed at least a broad usage of the white paper. Now the weekly dose concept. At a point in our group's work we reached a consensus that a weekly dose was the most effective block of time for measurement. We also agreed that the dose for the week would be the same equivalency as provided under the present regulation.

Therefore operations working a 40-hour work week would continue at the same rate as the present regulation, where operators working in excess of 40-hour weeks would be required to meet the same limits, in fact a de facto reduction in per hour exposure. We had discussed other time frames for dose measurement ranging from daily to a 28-day cycle. Each was rejected for a number of practical and logical reasons.

A daily dose limit restricts a short term excursion without any evidence that such a short term excursion has any health effect on a worker. Further, the use of daily sampling systems actually punishes operations that have migrated to more nonconventional schedules. Some Alpha affiliates operate schedules called weekend warriors where workers only work three days a week but each shift is extended in hours for up to 12 hours. The weekly dose concept assures that these workers are sampled and in compliance with their weekly limit but are not penalized by their extended shifts.

Workers working four 9s or four 10-hour shifts fall in the same category. What we saw is that the migration of schedules has changed over the last 20 years. When I first went in the industry basically you worked an 8-hour day and you were trying to get overtime because there wasn't enough money. We then went to schedules where we worked continuous six days a week, the hot seat changed and all the other parts of it, and a lot of our thinking was at that point in time a lot of the work we did.

We are now beginning a slow migration, and I agree it's slow, to schedules that more reflect a fewer hours but more people and more unique scheduling. The daily sample issue really really would impact the ability to do those kind of schedules. Personal samples. Secondly, the idea of each high risk person wearing a personal sampling device became a bedrock of our industry labor group's thinking for the implementation of PDMs.

The to personal sampling from area sampling was critical in developing a new and better way to measure respirable dust. Personal sampling also meshes with the weekly dose to provide a logical regulatory system. Each designated occupation person would be assigned his or her own PDM. Each of these individual's exposure to respirable dust would be measured individually, providing his or her weekly dose.

Compliance would be determined by each individual's personal sample. Thus if a mining machine was operated using two miner operators, each operator's personal exposure would have to meet the weekly dose, or actually it would be less than a weekly dose. Each individual would have the responsibility and empowerment to ensure that he or she is using proper positioning as measured by his or her own PDM. He or she would not be handed a PDM from another worker who had pushed the respirable dust levels upward by poor positioning, for example.

As we know, individual positioning is a behavioral issue and not easily controlled by plans, rules, et cetera. The PDM as a personal sampling unit empowers that individual worker to assure that he or she achieved compliance. What better change in a paradigm for workers than to be empowered to assure that their actions in conjunction with an established ventilation parameter and with a certified person's help provide a healthful atmosphere in which to work.

There are other benefits of the measuring of personal exposure as well that our working group thought about. The entire notion that coal mining operators need to sample on production days to meet X percent of normal production would be eliminated. Further, since each person assigned as a DO or as a designated fill in would wear a PDM, the variations inherent in mining operations, breakdowns, absentees, et cetera, are built into the system and are not artificially manufactured as the present system is designed to do.

Plan and administrative issues. The PDM in my view is sort of a go no-go device. Since the PDM reads and records real time exposure and provides the wearer with his potential exposure projections, the requirement to operate with overly complicated plans is reduced. The industry and labor stakeholders who worked on PDM implementation plans contemplated a reduced need for overly specific plan and administrative requirements.

The proposed rule, however, includes a great deal of both. One simple example is 70.202(c). That proposed regulation requires each certified dust sampler to be retested every three years. But MSHA employee must administer the test. This regulation is going to create an administrative scheduling nightmare. This scheduling issue should be considered further before any kind of rule is published.

Another is a CPDM performance plan which has a great deal of administrative gotcha potential without adding any real value. For example the plan criterion has a requirement for the certified sampler to visit the PDM wearer a certain number of times. Why? This should be a performance standard. The wearer has the data on his belt. He can notify the certified person as needed. The certified person can also check the unit as often as he feels necessary.

Empower the wearer to get the help if he needs it and don't establish a prescriptive approach to using a PDM. The requirement in the proposed regulation at 30 CFR 70.211 for administrative posting of sample results is another administrative requirement with limited value. At most, exception reports should be posted. Sending the entire weekly result to MSHA within two hours of the last production shift has no value other than possible citations being issued. If it is necessary to send information to MSHA, then the next official business day seems to be an adequate time.

The main part of my presentation is the pathways, I call it the pathways to compliance. I have commented on some key components of the work done by the industry and labor stakeholders to develop a plan for implementing PDMs in the regulatory scheme. Using a well worn cliche, we challenged each other to think outside the box. Nowhere was the thought process and developmental planning easy, nor did this thinking provide an easy system of compliance.

For example, I just used two miner operators as an example of sharing a job and the value of personal sampling to ensure individual compliance. Our operations, however, don't have all these trained operators available readily. To use this method we will need to train and develop them. The same would hold true on the long walls and other designated occupations.

The stakeholder's work to develop a concept whereby individual respirable dust inhalation compliance continued to be maintained week in and week out while at the same time our normal production would continue. Thus a compliance model developed by the group coupled with weekly dose with personal sampling provide for dose compliance by each individual designated occupation worker. This allowed for flexibility to maintain compliance when either the environmental controls were less than adequate for a period of time or more likely when the maximum weekly dose was significantly reduced due to quartz.

We never anticipated that the agency would attempt to reduce the standard below today's threshold. With the reduction proposed here and additional reductions for adjustment for quartz, some MMUs will be placed on a severely reduced standard. Add in the contemplated change in silica as outlined in the agency's regulatory agenda, as well as the recently imposed rock testing standards and the challenge to comply even with more flexible and performance driven ideas of our stakeholders group will be a major challenge to reduce coal mine dust of all types.

The proposed regulation may force the closure of some mines due to the quartz and silica content of the material mine. Looking at the proposed regulation I can find no pathway to compliance without a mine operator making the -- choice of violating the standard even while providing protection to his employees or shutting down production. The only option included in the proposal is the use of engineering controls.

The proposed regulation makes a leap of faith that within 24 months all MMUs can achieve compliance merely by the use of engineering controls. As I stated, our group's approach of using personal sampling with a weekly dose provides a more performance driven approach to compliance. Yet compliance with the proposed regulation's respirable dust reductions even excluding the potential of being required to meet an additional quartz reduction will be a significant challenge to any engineered respirable dust control system.

As I have previously stated, the use of single sample compliance precludes and eliminates unique shift schedules that are in everyone's best interests. Additionally, the use of single shift sampling that requires a citation be issued and a plan to be changed for each excursion provides no pathway when a problem is noted by the PDM wearer other than shutting down production for that shift.

This will add a huge incremental burden to an already malfunctioning and timely plan approval system that exist in some of our larger districts. An operator cannot change out workers in a designated occupation, cannot use administrative controls, and cannot use PPE of any sort. Interestingly, once a sample is in excess of the standard then the next shift a respirator is required to be made available. Why wouldn't an operator have the flexibility to note a potential overage and then if the personnel are not wearing the PPE already require it for the remainder of the shift?

I cannot fathom developing a proposed rule that is so prescriptively drawn that there is no pathways left for production to continue while compliance is achieved. Additional comments. X-rays. This has been discussed already and I'm just going to reemphasize it. 30 CFR 72.100 of the proposed regulation does not mandate X-rays for all employees. I cannot understand why a new proposed regulation would continue to maintain the present system of voluntary X-rays.

Additionally, why would any worker be permitted to work in a dusty environment when a transfer can protect him from further harm? It is time to rethink the original approach of voluntary X-rays and voluntary transfers. We need to X-ray everyone and we need to transfer those who have a problem.

Part 75 proposals. The proposed regulation mixes in several changes to 30 CFR Part 75. Now I have a section here on 30 CFR 75.322 involving the section splits, I'm going to skip that. Gary Hartsog and Bob discussed that enough. I will make one comment though. As I read the preamble I assumed that we were talking single split ventilation with two MMUs on it. If I understood your discussion with Gary you're contemplating even when we use two separate splits of air at the face with two MMUs. We can discuss that later if necessary.

30 CFR 75.362. This proposed regulation requires every on-shift respirable dust control examination to be entered in a record book, signed and counter signed each shift by a certified person and the mine foreman. I believe it's totally unnecessary. The rationale for this standard is no longer valid with the use of PDMs. With the use of PDMs the data of dust inhalation is recorded on the device. Why require record parameter checks other than it is now handled with daytime initials at the on a board at the MMU location?

As I said in the beginning of my testimony I have limited my comments to some of the practical effects of the proposal on a mine operation. I intend to provide more inclusive written comments before the close of the record. I appreciated this opportunity to testify and comment on the rules, and I'll answer any questions you have if you have any.

DR. WAGNER: Thanks very much.

MR. NIEWIADOMSKI: I have one question. Mr. Gallick, under the monitoring strategy or scheme that you discuss here employing a weekly dose concept, what's the strategy in preventing an individual, because you're advocating sampling individual miners instead of occupations, since apparently there is no concern about individual excursions how would, under your scheme how would you prevent the weekly dose exceeding an individual weekly dose for an individual miner? Under your scheme how would you prevent that from happening?

MR. GALLICK: How would I prevent the weekly dose?

MR. NIEWIADOMSKI: That's right, if you're allowing excursions on individual shifts.

MR. GALLICK: Well I'm not sure that you would blissfully allow excursions. You'd be measuring and empowering that worker to measure every shift and manage your system as best you can. At the end of the week as a week would end and you were closing in on noncompliance, then in my view you have to make some judgments. One judgment obviously would be a shifting to another worker and putting him on that job, as part of the job sharing and switching of people. The second one would be, well that would be my primary choice, my choice.

You're going to measure people each day. You have a lot more variability. What I see in the mines, and I think Joe made the comment we wish we could judge production. What you see is that you have ups and downs in the course of a week, and we would be taking somewhat advantage, and I hate to say that because I'd rather be loading coal the whole time, of those downs as much as the ups. Under the present scheme we have to have so much production to count it as a real sample.

MR. NIEWIADOMSKI: So under your particular scheme somebody would in fact would be tracking the cumulative exposure during the week, correct?

MR. GALLICK: Oh yes, yes, you have to, you can't wait until the end of the week.

MR. NIEWIADOMSKI: Thank you.

MR. THAXTON: John, I've got just two questions, and one of them is mainly to clarify a position on weekly exposure. There is, part of the proposal is to include a weekly exposure, and I understand that you're proposing basically that we should be sampling each individual that actually works as the designated occupation. Given that we didn't write the proposal in that fashion but the actual DO actually is required to wear the PDM on each day and each shift and we track that for a week Sunday through Saturday, and we track it by crew.

So like you expressed you have weekend warriors that work three days maybe 12-hour shifts and then the other crews come in and work a different shift, differently for the rest of the week. The proposal has set up in it that we would track that one crew that works say Monday through Thursday and then we track the second crew that works then Friday, Saturday, and Sunday separately and but they're tracked for a weekly exposure under the proposal. Does that comport to really what you're asking for except that we are tracking it by the occupation as opposed to individual miners?

MR. GALLICK: Well I'll start from, step back two steps. One is I would eliminate the daily shift sampling requirement altogether in terms of any kind of MSHA data, MSHA compliance or anything like that, so we're dealing with the entire week. From that point on the weekly sampling system that you put in there appears to match up with what I'm saying of Sunday through Saturday, if I happen to work six days a week, four days, three days, whatever that is.

MR. THAXTON: Okay.

MR. GALLICK: The second piece of that, and a key part of it as you and I, I think we just both said the same thing, is it would be each individual would be wearing his PDM if he's in a designated occupation, and as long as that individual can stay in compliance and maintain compliance then we would be in compliance. That's the key difference but it's a big difference.

MR. THAXTON: Okay, and that's what I just wanted to understand.

MR. GALLICK: I understand.

MR. THAXTON: The concept of weekly that we have you would probably go along with, it's just our concept of doing the designated occupation versus the individuals working in the designated occupation.

MR. GALLICK: Yeah, I prefer they have them the personal sampler, yes.

MR. THAXTON: Okay. The second question I have relates to the same thing though, you're proposing that we do personal sampling of the DOs, so if you have two people working in the designated occupation each one would be given a PDM and required to wear it. Can you provide to us an explanation of how you think that system of putting a unit on each individual that would be potentially working as the DO on that section or that shift, how that would provide protection for all the other miners working on that section if they're not being sampled?

MR. GALLICK: Well I can put something in writing for the final rule, but just my statement here would be that if you have other workers that you believe have an exposure issue, I'm assuming the designated occupation would be a decision by MSHA saying that the miner operator is the designated occupation therefore that's the job that I would measure. The shuttle car operators and the other people that are on that section would be at a lower level than that. If it's roof bolters and you want to make those a designated sampling then obviously that same issue would hold true.

MR. THAXTON: Well my concern is if we have two miners that work as the designated occupation, they run the continuous miner, they split the shift just say 5 hours each, you're working 10-hour shifts. If they do that they're only getting a 5-hour sample. That doesn't represent what the shuttle car operator or the roof bolter operator is exposed to for their full shift. Neither one of those samples is going to represent the full shift. Would you expect us possibly to add those samples together to determine what the exposure of other people would be or would you contemplate that we should be requiring those people also to be wearing CPDMs in order to assess their exposures?

MR. GALLICK: To answer your second question, no I wouldn't expect to add them together. Keeping in mind, if he's on a 10-hour shift he's running a miner for 5 but he's still wearing a PDM the other 5, so you're getting a total shift of his sample. I would suspect and expect that his total shift would be higher than any of the other workers.

If there's need to do sampling on the other workers to identify that if there's a problem then as you do now you can come in and do a multiple shift sampling approach like, you know, multiple person samples as MSHA does today to assure that everybody's in compliance. And I assume that there may be, your phrase in the new proposal is ODOs, I have assumed at some point in time that those, that some derivative of that is going to be in a proposed rule or a final rule.

MR. THAXTON: So you would agree with us selecting potentially other occupations that may need to be sampled for some period of time or at some point in order to ensure that they're being protected as well?

MR. GALLICK: Well agree might not be my choice of words, but --

MR. THAXTON: Accept then?

MR. GALLICK: I would expect, I would expect that that would be in a final rule, particularly the roof bolters as obviously there's, you know, that's a generating position also.

MR. THAXTON: Okay, thank you very much.

MR. GALLICK: Yes.

DR. WAGNER: When you were, I think that there were a couple of speakers supported by the NMA who suggested that averages aren't a good way to go, that we really need to be concerned about the repeated high excursions of dust as potential disease causation. Would your weekly sampling strategy account for that?

MR. GALLICK: I think it would. I listened to that, and obviously if someone has high excursions that should get caught in any 24/7 type sampling regimentation that you're using, regimen you're using, so I would expect that they would be picked up in that grouping. What I'm looking for is the ability to put our workers in a healthy environment but to be able to operate as effectively and efficiently as we can at the same time. That's my goal.

DR. WAGNER: Okay. Alpha has been using some CPDMs, is that right?

MR. GALLICK: Yes we have, I think 22.

DR. WAGNER: And how quickly if the recommendations that you and Mr. Lamonica made were embraced by the agency in totality, how quickly do you believe we could implement them?

MR. GALLICK: The practical side of it I think is fairly quick as far as setting up weekly dose and all that. The PDMs, you'd have to obviously our system would require a good many more than contemplated even in the regulation right now, the proposed regulation. I'm not sure if that's what you're asking.

DR. WAGNER: Yeah, well I guess I'm asking what should we do in the interim? Say it's one, two, three years away before you could fully have all the PDMs that you needed, everybody retrained, you said you might have to train some people to be able to swap them out.

MR. GALLICK: Yeah.

DR. WAGNER: What should we do in the interim?

MR. GALLICK: Well I assume it would be operate with the gravimetric system. I candidly haven't given on purpose I have just essentially ignored the transition from here where we are today to the PDM, the gravimetric thinking that whatever that is, that is. The critical in my mind at least, the critical step for us as an industry is to get to the PDM personal wearing, personal sampling, personal wearing, and personal empowerment concept as quickly as we can reasonably get there. I agree with you it will take a longer period than we'd like it to be.

We, you know, and I'll just, when we looked at our manpower, not only did we look at what I just said, miner operators if we were going to use two miner operators, let's use that example, but probably as critical and as difficult will be a number of technicians. I think Mark Watson gave a description of his ratios and when we looked at it, unrelated to

Mark, we didn't have any idea what he was doing until he sat down and talked, we came up with very similar numbers. Those people aren't just out there to be hired. They have to be hired and trained. We don't have them like in any kind of a training system per se.

DR. WAGNER: Great. Just request that as you're preparing your final written comments for submission any information, specific information that you can share on your experience with the CPDM and the various questions that I asked at the beginning of the day would be quite useful to all of us.

MR. GALLICK: Yeah.

DR. WAGNER: And again I want to thank you for both sticking around this long and for your thoughtful comments.

MR. GALLICK: No problem at all.

DR. WAGNER: Yeah.

MR. GALLICK: I have one other comment that you might want to add a 26th to your list of questions, and that would be what George asked Joe about what is a maximum daily dose and let other people comment on that.

DR. WAGNER: Great.

MR. GALLICK: Because the rest of us aren't in that technical skills to do that.

DR. WAGNER: Thank you.

MR. GALLICK: You're welcome.

DR. WAGNER: We're going to break for the next 12 minutes, come back at five minutes to 6 on that clock.

(Whereupon, a brief recess was taken.)

DR. WAGNER: Couple people have asked we have four more people who have signed up to speak. We're hoping that each of them will have the opportunity to speak and interact with the panel, and then anyone else who didn't sign up to speak would certainly be welcome to speak as well. I don't know, you're Rick Reiss?

MR. REISS: Rick Reiss.

DR. WAGNER: Rick Reiss from Exponent will be our next speaker.

MR. REISS: Thank you. Yes, my name is Rick Reiss from Exponent. My co-author on this presentation is Ken Bogen also of Exponent. Ken is not with us today. So we're with Exponent, we've provided an independent review of the QRA of the proposed rule. We've received funding from Murray Energy to conduct the review, however the opinions and comments presented here reflect our independent assessment.

So just a little bit of background on our qualifications. I'm a principal scientist at Exponent and an expert in risk assessment and air quality, on the editorial board of Risk Analysis and a past president and fellow of the Society for Risk Analysis. Dr. Bogen is a managing scientist and an expert in risk assessment in biomathematics, and he's been, he was a member of the NRC committee on science and judgment in risk assessment.

The QRA provides the basis for estimating the reduced incidence in respiratory disease associated with the rule and includes several parts that we'll comment on. First there's a mathematical model that's used to estimate the reduced level of coal dust that's needed to comply with the rule, and it's based on an analysis of MSHA inspector and operator data from 2004 to 2008. We have obtained those data sets from MSHA and have also analyzed them. That data is used to then estimate the reduced incidence of respiratory disease associated with the dust level reduction, and those are based on published epidemiologic studies as has been discussed already.

Our overall impression is that the QRA represents a very significant scientific work using advanced mathematical tools, however the complexity of the assessment makes it somewhat less transparent. The health benefits are based on not the best population comparison. It's something that I'll comment on briefly and Dr. Cantor who will follow me commenting on the economic analysis will expand on.

My main comment today is that the QRA may significantly underestimate the coal dust concentration reduction that is required to meet the exposure limit of the standard. We've heard some other discussion about that today, I think the analysis I have will expand upon that. The QRA would also be strengthened by the inclusion of a quantitative uncertainty analysis. That echoes one of Dr. Cox's comments.

Again I'm just briefly going to touch on this. The QRA essentially compares workers exposed to the 2-milligram per meter cubed standard for their career with workers exposed to the 1-milligram per meter cubed standard for their career. No current worker is really exposed to the 2-milligram meter cubed standard for their entire working life, almost their entire working life in some cases, although concentrations have declined through time which is something that's not accounted for in the rule or in the QRA.

The full estimated benefits will not be realized or may not be realized, the estimated benefits in the QRA may not be realized for 45 years or the occupational lifetime assumed in the QRA, or when there's a full turnover of the population of workers. There's an acknowledgment of this uncertainty or difficulty in prior rule making such as the 2003 PREA, and it should be acknowledged here.

Again the main comments I'm presenting here today are about the required coal dust concentrations that are needed to meet the standard. As we've discussed there's a variety of different things that are proposed to be changed. One, the level is proposed of course to go from 2 to 1. That is, yes, accounted for in the QRA.

We also have a change from a five-shift average to a one-shift exceedence. This is only partially dealt with in the QRA but in a way that as the QRA acknowledges underestimates the potential effect of that change. Perhaps more significantly is there's substantially more required samples under the sampling requirements of the proposed rule, and that will dramatically increase the chances of one having an exceedence of the standard simply because you're monitoring dramatically more times.

So we've tried to build a statistical model to estimate some of these, the effects of some of these changes. So we went ahead again and we have the coal dust concentrations that were used as the analysis basis for the QRA, and we focused on the long wall tailgate operators as an example for this presentation, they're the highest exposed cohort. We assumed mixed log normal distributions and found an excellent fit using that distributional assumption, so that essentially gives us a statistical distribution of the data from which we can calculate percentiles such as probability 95 percent of the samples being less than that or 99 percent of the samples being less, et cetera.

And so we used that in our statistical model to draw sample sized in relation to the expected number of samples to be collected so we would account for the differences in the number of samples. So whereas before you may have been sampling bimonthly on a five-shift average, now for this particular occupation you may be sampling every shift every day for the entire year, so dramatically more potential samples being collected.

With the statistical model we're able to simulate the five-shift average and single shifts and then use the model to essentially ratchet down the mean concentration that would be necessary to attain the standard at a given rate of compliance. And we've done that by, again we've assumed and we think well modeled the data with a mixed log normal distribution, we've assumed that that distribution would retain the same shape and variance but as the concentration was reduced, so that provides us a way to model the change in the different criteria.

So this is a figure, or I'm sorry, a table that shows different compliance scenarios and what the mean level will need to be reduced to for compliance. So for this particular table I've assumed a 99 percent annual compliance, meaning the operator in a given year is going to try to reduce concentrations so that they have a 99 percent chance of not having an exceedence throughout the year. So this isn't per sample, this is, you know, a 99 percent chance they won't exceed the standard at any time during a given year.

So in the first row we see the current standard of 1, but using the current -- I'm sorry, the proposed standard of 1, but using the current compliance method or the five-shift average. You're still obviously for this particular long wall tailgate operator your mean concentrations are about 1.3, so when the standard goes to 1, whatever compliance method it doesn't matter, you're always going to exceed the standard. You would need to reduce the concentrations according to our model by 62 percent to assure this 99 percent annual compliance, which would be a mean concentration of .53.

I'll just skip down in the interest of time to the last row which shows the proposed standard of 1 with the proposed compliance method of collecting samples at every shift. To reliably comply with this standard at a 99 percent annual compliance rate you would need to reduce the concentrations by 92 percent or assure that the mean concentration was .11 milligrams per meter cubes, and I'll show a distribution of that in a moment.

So this just shows the same concentration data on a different type of plot. So you're starting at 1.39 which is the current average from this particular for long wall tailgate operators with the current compliance method but with the 1-milligram per meter cubed standard you need to go down to .53, and then you need to go down to .11 with the new compliance method.

This shows an alternative compliance strategy where you only assure 95 percent compliance. So this means in a given year I'll be, I want to reduce the concentrations to be 95 percent sure that I won't have an exceedence throughout the year. And you can see the concentration that you need to reduce that is a little bit higher at .14, or a 90 percent reduction from the current levels.

Now we've heard discussion today about this idea of a weekly exceedence, meaning you might have multiple exceedences within the week and that would only count as potentially one exceedence. Although our reading of the rule is that's not clear, I think some clarity on that would be helpful. We have not modeled that particular scenario, but with the model that we have developed we can also model that and see what level of reduction would be needed to achieve the same aim.

I'm trying here to just illustrate the difficulty of going from a single shift to a five-shift average, so this just looks at the data at the current conditions. The green shows what the single shift compliance or the single shift distribution is, where you get about even under current conditions about 85 percent of the samples are above 2, the current standard.

However, when you move to the five-shift averages with what's in place you're up there into the mid upper 90s. So that shows you if we had a single shift compliance currently with this particular long wall operator occupation you'd have substantial noncompliance with the 2-milligram per meter cubed standard. So there's a significant difference obviously in going from single shift to five-shift.

This just shows the distribution from our model that you would need to reliably obtain to reliably have a 99 percent compliance rate. Again the mean was about .11 I think milligrams per meter cubed. And the point is that, you know, while the vast majority of your concentrations in this case are going to be below about .4, if you're taking upwards of 1,000 samples per year and you're saying any one of those is in exceedence, what you're really asking for is something upwards of the 99.9th percentile.

There are other regulations like in air quality that deal specifically with percentiles, like use the 98th percentile for example. But if you're taking all of those samples, you know, statistically you're bound to get something out there toward that long tail, essentially you're complying at the long tail. So I just did a scenario here, what if the operator average is to reduce to .5 milligrams per meter cubed, and you still would see significant noncompliance.

So this is even with the single sample, even though you're at .5 which is half of the standard, if you have a single sample compliance strategy, you know, still upwards of 98 percent of the samples are in noncompliance. So even reducing the concentrations to half of the standard under this criteria and this shape of a distribution, you're going to still get significant noncompliance.

So I want to move on to a couple of other comments that we have about the model or about the QRA. Again we think there's some unnecessary complexity in the dust concentration model that's used. All the data were transformed with this box cox method. We were able to show that the data are from a mixed normal or a mixed log normal distribution and that transformation was unnecessary. The statistical model is extremely complicated, there's over 20,000 parameters. A more parsimonious model would be I think better.

Also, perhaps a small point, but the operator data prior to 2008 was not used due to the conclusion that there was a downward trend. We took another look at that and we think the trend analysis doesn't account for the smaller sample sizes through time and that may have led to a spurious result. And if not, you could have used some more data in the analysis.

Just echoing some of the earlier comments about the lack of a quantitative uncertainty analysis. The QRA provides the reader little basis for assessing the uncertainty of the estimates. Now you have a plethora of data, you have all this concentration data that went into the modeling, the effects estimates are based on regression models that have associated standard errors with them. That's all the data and tools you need to do a quantitative uncertainty analysis, and given the magnitude of this rule I think that would have been helpful.

It also would have been helpful, the QRA helpfully does acknowledge that there's the potential for a threshold effect, it states that the peaks in concentrations "may overload the respiratory system's clearance mechanisms." There are other rules that I've seen, like for particulate matter for air quality, the ambient air quality standards, that look at the potential effect by drawing a few plausible threshold levels and looking at how the conclusions of the QRA would be different if you assumed a threshold. So I think that would be a helpful analysis as well.

So just wrapping up, conclusions. Should make clear that the benefits may not be realized until well into the future. Our most important comment is that the QRA does not provide a realistic estimate of the changes needed to comply with the standard, and we really think a thorough analysis is needed to understand the required reductions based on sound statistical modeling and perhaps a consideration of alternative statistically based methodologies for establishing what an exceedence or violation is.

As I've said before, you have, there are ambient air quality standards that are based on upper percentiles of the distribution as opposed to just a single exceedence. We think we can reduce the complexity of the statistical model and perform a quantitative uncertainty analysis. So that concludes my presentation so I'm happy to take comments.

DR. WAGNER: Thank you very much.

MR. KOGUT: Thanks for your comments. Do you have any evidence from other contexts of industrial hygiene measurements that the distribution after a reduction in a standard would retain the same shape and distributional form as it had prior to a change in the exposure limit?

MR. REISS: I don't. And, you know, obviously we don't know what the shape of the distribution was. We thought the most reasonable thing to assume for the purposes of an analysis to estimate what the potential exceedances would be to assume that the shape retained, would retain the same shape and variances as the current distribution. So obviously it's compressed a little bit, you know, because the concentrations are reduced, but we assumed the same shape.

MR. KOGUT: So the answer is that you don't have any empirical data showing that in other contexts or in similar contexts that the distributional form remains, does remain the same?

MR. REISS: I'm not aware of any such data.

MR. KOGUT: It seems that particularly in the presence of something like the CPDM where people can have feedback immediately during a shift as to what their projected dosage is going to be by the end of the shift that it might be that people would, and I think this is one of the motivations behind the PDM, that people would be able to adjust their work practices in order to prevent an excursion. So it seems that going to a CPDM in itself would provide information to a miner that would work against retaining the same shape on the distribution. You understand my point?

MR. REISS: I think I understand your question. I think it's still a speculative, you know, I don't think we know that. I mean you could speculate that it would. There's also I mean we saw the data that was presented comparing the CPDM with the more traditional samplers and, you know, there's quite a bit of variance between the results. So the measurement error, I mean I didn't account for measurement error for example in the analysis which is something that could stretch out the distribution even more.

MR. KOGUT: Okay.

MR. THAXTON: I just have two points. Number one, as a point of clarification you have on all your slides you refer to coal dust standard and coal dust levels. We don't have a coal dust level, we have a coal mine dust level. So there is no such thing in MSHA for a coal dust standard. So for your future writing and submitting of comments if you can, you might want to take that into consideration of what you actually put on. Number two, you indicate at the beginning that you did this under funding from Murray Energy. Was this document shared with Murray Energy?

MR. REISS: Yes.

MR. THAXTON: So they approved the or gave you okay that this was the document that they wanted presented?

MR. REISS: As I said, the document is our own. They didn't approve but they saw and commented on it.

MR. THAXTON: Would you be here presenting it if they disagreed with it and said, no we don't like that?

MR. REISS: I can't answer that, I don't know.

MR. THAXTON: Thanks.

DR. WAGNER: You raised the question about the possible downward trend in dust exposures that was built into the quantitative risk assessment, raised a question as to whether or not that reflected reality.

MR. REISS: Just between 2004 and 2008.

DR. WAGNER: Okay --

MR. GREEN: Mr. Chairman?

DR. WAGNER: Yes.

MR. GREEN: May I speak for a moment in support of Dr. Reiss?

DR. WAGNER: In a second you can, we're almost done.

MR. GREEN: Okay.

DR. WAGNER: I was interested, you mentioned that your assumptions were that the distribution of dust exposures following the implementation of a new standard would be unchanged from that previously, is that correct, the distribution of samples would be the same, the same variability?

MR. REISS: The shape.

DR. WAGNER: The shape of the curve.

MR. REISS: The relative variability, yes. The variability relative to the mean, yes.

DR. WAGNER: What would be the consequences of making alternate assumptions?

MR. REISS: That's something we probably should do for our final comments. I mean, yeah, I mean if you assume higher variability then you would have, you'd have to ratchet it down even lower, if you were to assume a tighter distribution it would have the opposite effect.

DR. WAGNER: Okay, thank you very much. And unless you specifically are asking Mr. Green to speak on your behalf then we can wait until the end of the --

MR. GREEN: Murray Energy Company has asked me to speak on their behalf.

DR. WAGNER: Oh, okay, good deal.

MR. GREEN: I'll just take one minute because I know --

DR. WAGNER: And identify yourself please for the court reporter.

MR. GREEN: I will be happy to do so. Good evening, everybody. My name is Ed Green, I'm an attorney with Crowell & Moring, LLP, in Washington, and I'm counsel to Murray Energy Company. That's Green like the color, and it's not easy being green especially at this time of the evening. I just have one short comment to make to the panel and to Mr. Thaxton in particular, and that is that we believe it's entirely inappropriate for your line of questioning in terms of whether or not Murray Energy Company reviewed the good Doctor's work product or approved it.

That has nothing to do with this public hearing and those kinds of questions have been asked at previous public hearings by expert witnesses from Exponent on behalf of Murray Energy Company, and we want to say strongly and without equivocation that that is inappropriate and has no place in this public forum. And thank you very much.

DR. WAGNER: Thank you very much. The next speaker is Robin Cantor, also from Exponent.

MS. CANTOR: My name is Robin Cantor, that's R-O-B-I-N C-A-N-T-O-R. Thank you for the opportunity to speak with you this evening. And let's see if we can get this loaded up. Oh, okay, thank you, well then I'll take a minute and just say that this work is work that I have essentially the same disclosure that Dr. Reiss had, I was engaged by Murray Energy and but the work has been done independently. And also I want to point out that this work is ongoing and I have to say that I learned many things in this hearing today that probably I will want to address in some of the modeling that we've done.

DR. WAGNER: And sorry for the interruption, you can start however you want again.

MS. CANTOR: No, that's fine, I think I'll just tell you a little bit about myself. I'm an economist, I've been working in the applied economics and energy area for over 30 years. I am a principal at Exponent, which is a scientific and engineering consulting company, and I'm also former program director for Decision, Risk, and Management Sciences which is a research program of the National Science

Foundation.

I was a senior researcher at Oak Ridge National Laboratory for ten years, where I did quite a bit of analysis on coal technologies and the externalities of coal technologies. And also I am a former president of the Society for Risk Analysis and I was an appointed member of the research strategies advisory committee of the EPA's Science Advisory Board. So that's just a little background on me.

And I've already mentioned the disclosure, I think we can go past this. We maybe, I don't know if we need to have a lot of conversation about why economics matters, but one thing that I have heard here today is a lot of information about tradeoffs and decisions that have to be made and factors that have to be weighed. And when you have that kind of an environment you should be thinking about economics because I think that ultimately that does play into what happens with people's jobs, their livelihoods, and their health opportunities, because when you take resources and use them in one area that means that they won't be available in other areas. So I think that the economics matters a great deal.

I'm going to speak to you a little bit about some concerns about the preliminary regulatory economic assessment, I hope it's assessment. And I'm going to focus on two main areas, one is the compliance costs, and then the second area deals with the benefits. And I'm going to speak a bit about some of the supporting documentation and analysis because I think that one thing we have heard here today is that there are differences between industry's view of certain assumptions or facts and what has been assumed in the PREA, I'm going to use PREA as an acronym for the report.

I'm also going to speak to certain cost estimates where we tried to take the estimates that were in the PREA and then find other information to see whether or not those cost estimates seemed to make sense. And then I have a similar concern to other speakers that you've heard already, which is there really isn't a formal treatment of uncertainties in the report and there needs to be. You're talking about on the cost side some of the things are more near term, on the benefits side they are way out there. You have to have a formal treatment of uncertainty.

And I know that currently the report has the second scenario where they assume that the benefits don't start for 10 years, but that is not really the type of formal treatment of uncertainty that I'm speaking to. So the other thing that I'm going to mention about the benefits, again Dr. Reiss already has raised this issue that it does depend on this hypothetical cohort of miners, which is essentially a completely new workforce. And so then the issue becomes how realistic is it to assume that you have these two cohorts then you measure your benefits and then put that back in the context of the existing inventory of workers.

And I think the issue is not, and I understand that in regulatory analysis of this sort doing this kind of cohort analysis is very common, but what I would suggest is that you have to give it some context with the actual cohorts of workers that you're dealing with. So you have to give us some sense if you're going to assume that you have this 45-year working life for this particular cohort, where are you with your workers that you have right now? So again, even under the scenario where you don't look at the benefits for the first 10 years that would be assuming that all your workers right now were in the system for 35 years, and I think that's a bit unreasonable and you probably should do a little bit more analysis there.

So just a brief summary of what's in the PREA. The cost of compliance looks at a number of activities and costs for mines in different size categories and it also sometimes reflects the number of employees per mine. It looks at cost items that include the installation of engineering controls, abatement costs, certification costs, use of the CPDMs, sampling methods, training, and citations. And then it estimates the first year and annualized compliance costs.

And then on the benefits side, as I've mentioned, it's got the value of injuries to miners that it's looking at the value of the injuries that will be avoided by the regulations by the proposed standards. I take the point about coal mine dust to heart here. Also it uses the quantitative risk assessment to then come up with estimates for the number of injuries that will be avoided, morbidity mortality injuries, and then it monetizes them using estimates from the literature for values of avoiding mortality and morbidity risks.

And in the cost of compliance, estimates approximately $72 million to $93 million in costs for the industry in the first year and then approximately $40 million to $45 million in annualized costs. And then the annualized benefits have some, you know, 3,000 to 4,000 avoided health injuries, 106 to 131 avoided deaths, and then those are monetized to $99 million to $197 million in annualized benefits. So that's just background on this.

Now I guess what I would say about the presentation of the information that I do think you should present cash flow information. Again because you have many of these compliance costs in the front end and they will obviously be at various levels, and then you have your benefits that are coming into play either immediately or after 10 years, but the point is that it would be very helpful for people to make suggestions about what can be done for the analysis if they can see that cash flow.

So in reading through, in looking at the PREA and reading through various assumptions that are made, I think that, and it may be that some of this is so obvious to you that when you write these things up you know that this is the correct number of the MMUs or this is the correct number of folks that will be applied to a task, but many of these things come across as assumptions that you're making without any supporting documentation or material or how you know this, and I think that it would be very helpful to either cite to other documents or cite to, I don't know if there was any kind of polling of the industry here for the compliance costs, that's often done for regulatory analysis, but just some background on where a lot of these numbers are coming from.

And maybe, again there's many many numbers in the document, but at least for the very large ones. So for example where it's talking about the cost of a shaft, a new shaft, it would be very nice to know where is this number coming from. Okay, and going again to this point about the facts or assumptions, I'm going to look at two particular examples here and use them to illustrate that I think that there are some large discrepancies, but I also am aware of some of the things that were said today and I think that, I'm not sure if that makes me think there's more discrepancy or less discrepancy, but I can comment on that.

Okay, so one of the things that did come up today was what is the number of MMUs likely to incur costs from the required responses, and in particular it came up about this issue of the MMUs that would be affected by the separate split of intake air, so a lot of conversation about that and this issue of the supersections.

So we reached out to industry and asked them to please tell us what were the number -- and this should be relabeled and will be relabeled in what we submit for the final, but these are the number of MMUs that are supersection MMUs, and so the second column really should be labeled the number of MMUs in supersections. But you can see that the number is -- oh here, I'll use this, okay. Okay, so from industry we learned that the number is 265, and MSHA's number in the PREA is 50. So that's a fairly large discrepancy and I think that that needs to be reconciled.

Okay, another area that we looked at was how many of the CPDMs would be required at an MMU. And what we did here, we only looked at the, this is for underground, just the DO, the ODO, we didn't look at the supplementary controls or the Part 90 miners, we just kept this simple to this particular definition. And so when we looked at that we get the estimate of 2.74 CPDMs, you know, we could round to 3, but per MMU.

And when we collected information from industry, because industry is particularly concerned about this issue of having some sort of a markup for maintenance or reliability, I mean the fact of the matter is that with these proposed rules you will have to have these things available, so if there is a reliability problem you have to gross up the number that you need to account for that. And so that led to an estimate of 5 per MMU. And I think that we also heard today we heard some other estimates that were much larger than that, so we were being very conservative here in our use of the information.

So the other thing that I want to point out, when we did this analysis we didn't think there was enough attention paid to how these units are going to operate in the field, and I think we've also heard that a number of times today that, you know, the reliability's an issue, the maintenance is an issue, how are these things going to function out there, I think there's also a question about the ramp-up to the number of units.

We didn't really hear anything about that today but as I understand it there's only a couple of hundred that might be out there right now and you're talking of going to thousands at some point, and so I think that that probably does need to be addressed. But in any case there's also issues having to do with the reliability of the samples and whether or not you would need additional samples for compliance sampling.

But when you put all this information together, and this I know is impossible for anybody to read, but we heard today that there is a disagreement about the cost of the CPDM. So again we have documentation showing the cost to be $12,900, and there doesn't seem to be any disagreement about the five-year protection plan. There is disagreement about the number of units that you're going to need at the MMU.

And what we actually did here, so you might recognize some of these things, this is really from the report itself, we've taken all of the assumptions that were made to look at the number of for example filters that you need in 12 months versus how many you need in 18 months and we applied the same kind of discounting. We didn't change any of that, we just plugged that right in.

And so when you look at it, what you can see is it's really the discussion about the cost of the units and the number of the units is driving the major discrepancy between the $30 million that we get under the MSHA assumptions and $66 million that we get under the alternative assumptions. And then when you add that all up you have a difference between $34 million and about $71 million. So that's a fairly large discrepancy I think with the cost figures.

Now when we did separate analysis looking at how many filters you would need for the sampling, we actually, and we heard this today as well that I think we're all in agreement on that because you know the DOs, the ODOs, you know how many shifts you're going to have, you can actually work through and I think come up with very consistent results on the sampling. But I will point out, we didn't think this really handled what's going to happen with voided samples. So I'm not sure if that's something that you've considered or, as I understand it there can be quite a number of voided samples and so the issue is what would that do to this number of samples needed? But it's really not the samples that are driving the difference in cost, it's really the cost of the equipment and the reliability.

We also noticed that there were a number of important omitted cost categories. So again today we heard a little bit about additional personnel that might be required. We also heard but not quantified in any way that there might be health and safety cost because of the devices themselves and whether or not they're heavy and difficult to work with, and so we think that should be addressed. We heard a lot of discussion about different production changes, and I'm going to actually focus on work stoppages that result from this issue of exceeding the limits with the individual samples, something that there has been a lot of discussion about today, but I'm going to show you that we did the analysis a little bit differently from what you've seen already.

So just going to the additional personnel, there was an estimate given today about how many additional technicians you would need because these units do need to be started before the shift, they have to be attended to, distributed, and I think our analysis showed that if you had four to six CPDMs units per shift distributed across various DOs, three shifts, then you would need multiple technicians per mine. So we were, our number came down to about two technicians per mine, but that would be for an average sized mine, obviously not a very large mine that we were hearing about today. And then the costs of hiring these additional personnel have not been addressed at this point in the PREA.

We also heard a bit about these ergonomic considerations and how they might create health and safety actually costs that need to be addressed. And so there's no estimate, there's no analysis right now about this particular issue. And then we did hear a lot about the citation related events. And the PREA right now basically says that it doesn't look at the cost of the citations, the penalties, because it considers that to be a transfer payment.

Okay, but that is a static economic concept, and in the actual world it can have implications for operations, investments, industry structure. Any time, if you have the potential of very large penalties in an industry you have the potential that certain operators will not be able to stay in business, and so you may have exit in your industry which of course then has real efficiency implications.

So we then looked more carefully at this second point up here, the work stoppages as a result of triggering corrective actions. And we made a number of assumptions but I think that in general we followed the approach that MSHA took in looking at the technological feasibility where you looked at the samples, you looked at the samples that were currently above 2.0, and you looked at the samples that were above 1.0, and you also did adjustments for the full shift sampling and for the issue of, let's see, oh, and the definition of production, right, that's right.

And so we didn't do those adjustments, we just took the data, we basically focused on the 2010 data of the samples, but we were also looking at this difference, what kind of percents were you looking at at the 2.0, the percents at 1.0, and then what did you learn about this increase in sampling? Because I think it's both those factors that really need to be addressed here. It's not just that you're changing the standard, but you're also changing that base of samples that's going to be looked at for compliance.

And that's just huge. If you look at the 2010 and the operator sample count was about 30,000 or so, we were just looking at underground and we were looking at the long wall and the continuous miner, and then you're going to go up to 750,000, I mean this is an enormous increase. And so that increase in sampling is what can cause a very large change in production delays that you might incur because you're trying to comply with the standards.

And so what we assumed here, and, you know, today we heard that it was assumed that if you had the, you were out of compliance that would affect the number of shifts where you had a citation. We looked at that if you had a sample above the 1.0 then that would lead to a one-hour delay on your MMU, because you would have to do something. So I think this goes back to a comment that was made here today which is the burden being placed on industry so that they take the responsibility for making some adjustment and immediate adjustment to make sure that you are protecting the workers, and so we've assumed that's a one-hour delay.

Okay, so when we do that, and just to tell you these are the production assumptions that we built into this model, basically using the 2009 data from EIA. And we only, we looked at the long wall production, then there was continuous miner that was for long wall production, separated that out from information from industry, and then we had the other, the continuous miner that's actually listed in the EIA report.

And we then needed assumptions about, because we were doing this on a per hour basis, we needed assumptions about the tons per hour of production. And we used numbers from industry which put the long wall at 783, and I know you have 736. The continuous miner for long wall production was 65. And then we used your assumption of the 102 tons per hour at the continuous miner.

I have to admit I looked at the literature, I collected, I don't know, 20 reports that talk about production rates, and the numbers are all over the place. So I decided that maybe it makes sense I would use your assumptions so that we wouldn't have any disagreement about that. And when you use the, I used the 2009 average price per ton from the EIA report. That gives you then essentially your marginal value of an hour in these different kinds of production. So these different modes of mining have very different marginal value per hour because they have different production rates.

And so we billed that into a model that, so here's, and again this is very similar to what you were looking at when you were making comparisons between the existing standard and the proposed standard. Looking at the samples, the percentage of samples that exceeded the 2.0 milligrams per cubic meter. And so you can see for the long wall we found 6 percent, for the continuous miner we found 4 percent exceeded the standard.

So we did, and here's an important point. So for all the samples that were taken there were 920 samples then out of, I guess it was about 27,000 samples, 920 exceeded the standard. So it gives you a perspective. This is really here for perspective because you didn't have a cost of $7 million falling on industry, you had in fact a small number of citations, as I understand it you had, I want to say 215 I think it was for the underground miners and like 7, in 2009, for the surface miners, so a very small number of citations.

But if you are using the single samples, and again I know there is some disagreement about whether or not you're talking about for the week or you're talking about on a single sample per shift basis, but nonetheless, if you take this as an indication of you are exceeding a sample and you have to do something about it and it's going to cause a one-hour delay in your MMU, then these are the financial consequences of that.

Under the proposed standard now where you go to the 1 milligram per cubic meter, then we use that data to investigate what was the proportion in each of the different modes of mining that would exceed that standard. And we had 51 percent for the long wall and 22 percent for the continuous miner. And that led to revenues loss, and we actually took the difference here but it's questionable whether or not there should be any difference, but it's about $1.8 billion is what it works out for at the industry level.

So then responding to some of the comments again today where there's this issue of, well but this is before you get down a learning curve and before you've made the investment in the equipment and so what do you think things might look like after that point? To get some sense of that, we said, well what if you only have your out of compliance only at the levels that you were out of compliance when you had the 1 percent standard, I mean, excuse me, the 2.0 standard?

And so then we found out of the 734,000 samples you would exceed on about 30,000 of them, but you can see that still led to a very large revenue loss if you have the same assumption of a one-hour production delay, and that's about $254 million. So this type of analysis can be used to ask those kinds of questions, what if you get the investments and your experience changes and you then are mimicking the compliance experience that you have under the current standards at some point in the future with the proposed standards.

Okay, so just a quick summary then. I looked at, this presentation looks at the three admitted cost areas. We're doing continuing review of the required actions, and so for example we're looking at some of the things that have been proposed as the engineering controls, whether or not they're feasible, can they be done? Because I think the question came up earlier, well if they're not feasible then have we overestimated the cost of compliance? Well if you've got something that's not feasible then you've actually severely underestimated the cost of compliance because the cost to be able to do something that really isn't feasible is a very high cost, I don't want to say infinite, but it might be.

Okay, so now I'd like to switch a little bit, well switch to the benefits area. And I think that the approaches for the costs seem very different at least to me from the approach for the benefits because the benefits really was more of this hypothetical comparison between these two cohorts whereas the cost information seemed to be really grounded in information that you could know about the industry.

And I was a bit surprised by that, I wondered why there wasn't more analysis then of the workforce and the various ages. For example, in other areas, asbestos is a good example, where you actually take the workforce and you break it down into cohorts and you look at turnover rates within the cohorts and you have much more detail about the actual workforce.

The basic assumptions here that we were reviewing, the two cohorts, the status quo, what would be the status quo exposure for the 45 years, and then this comparison to the reduced limits and the increased sampling. And the issue is, does that really capture the reality of bringing in these proposed rules and what kinds of benefits you would be generating for the existing workforce?

So, you know, here's a slide on the standard approach to measuring the benefits of avoided health injuries, basically trying to define the existing worker cohorts, their exposures, their turnover conditions, control for other causes of injuries and adverse conditions, simulate the injuries due to the current exposures which is your status quo, and then identify how the exposures change from the implementation of new regulations, simulate those injuries and value them, and then find the difference between the two. That's a fairly standard approach.

But what is of concern here with the way the benefits are done for the PREA is that basically when you're just comparing the two cohorts, and what I've done here is just assumed a simple description of the value of these injuries so the top line is the value of the injuries under the existing standard, the red line is the value of the injuries under the proposed standard assuming that the information in the QRA is correct and you really do have avoided health injuries here, you have avoided injuries and avoided mortality.

The current approach essentially overestimates the benefits because this area A is what you don't get because you've got this existing inventory of workers and they haven't turned over yet. And in fact this date here, this T star is, you know, the hypothetical date at which they do turn over. So it's the recognition that you aren't going to generate these benefits from day 1, and you recognized that as well because that's why you have your 10-year sensitivity analysis, but it's probably 10 years is probably not enough when you consider this workforce and you consider how long these people stay in these jobs and that the industry does rely on experienced workers. And that needs to be at least analyzed to whether the 10 year is sufficient.

And so this is from that the prior PREA that was for the 2003 single sample, the proposed rules for single samples. And I think that this was very well recognized by that report, and I'll just read the one line here that "the total realized benefits would not be fully evident until after the youngest of today's underground coal miners retire." I mean so they obviously recognized this was a problem for the benefits and this doesn't really come through in the current analysis.

And I think there might be some issue here to think about whether or not the benefits have been defined correctly. So, so much of what we heard today was that there can be other things that are, you know, where benefits are being generated for the miners to know how to be more proactive about their situations and, you know, what are good investments, what are good production changes, all of that.

And I wondered whether or not there needed to be some additional thought that it's not just this, you know, you have one standard, another standard, and then you have this avoided injuries and death, but rather that there might be a number of factors having to do with the conditions in the workplace and the ability to modify the workplace conditions, so.

And so just a quick summary, the cost of compliance analysis is based on assumptions where we found some major discrepancies. If you only look at the omitted costs in this presentation then the cost of compliance would be many times what the PREA estimates. The estimate of benefit is based on a unrealistic hypothetical and then there is no additional analysis to help you understand or at least put in context that hypothetical.

And I also found statements in the PREA that made me think that MSHA perhaps can't estimate the benefits properly and, did we pull those out? Maybe we pulled those out. But there were a number of statements that said you don't have the information on the current workforce to be able to characterize the cohort and to be able to move them along in time and understand exactly how their injuries would change. I think that probably could be done. I've certainly seen it done in other industries. So I wonder if at least some analysis might be done there. And questions or comments?

DR. WAGNER: Thank you very much.

MR. KOGUT: Thank you for your comments. And I'd like to address this both to you and if Dr. Reiss is still here maybe he could address this as well because he brought up the question of the uncertainty analysis also. So what I want to ask you about is how you would utilize an uncertainty analysis in the context of risk assessment and for the benefits section of the PREA as well.

So to give you sort of a concrete example of what I'm asking about, in Table 28 of the QRA for example the estimated reduction in excess risk that we're projecting under the proposed rule as compared to existing conditions for long wall tailgate operators would be, for example this is done for various categories of adverse outcomes but for PMF the projected reduction as a point estimate is 54 cases per thousand workers, thousand long wall tailgate operators who are exposed for an occupational lifetime of 45 years.

And that's the point estimate, you said that you've done work with the EPA in the past and I think their general practice at least in a lot of contexts that I've seen is not to use a point estimate like that but because they want to err on the side of overprotection rather than, their definition of being conservative is to err on the side of --

MS. CANTOR: Right, right, conservative assumptions, yeah.

MR. KOGUT: So they use an upper confidence limit. Now you're right that the QRA did not calculate upper and lower confidence limits for these projected reductions, but say that in the case of the long wall tailgate operators this reduction of 54 adverse outcomes per thousand exposed workers falls well above what the Supreme Court in its Benzene decision, you know, said was a clear -- I'm sorry?

MS. CANTOR: You need to hold the mic in front of you.

MR. KOGUT: Oh I'm sorry, I'm sorry. What the Supreme Court said in the Benzene Decision was a clear example of a significant improvement or significant benefit of a proposed rule, which they said 1 per thousand would be clearly a significant benefit. So here the point estimate is 54 and the upper confidence limit, which traditionally has been used in other contexts by agencies like the EPA, you know, would obviously be something more than 54, so I don't know what it would be but, you know, maybe it would be 150 or something.

And the lower limit would be obviously something less than 54 but pretty clearly, you know, some positive number, maybe a positive number less than one. So let's say it would be a fraction, let's say it would even be .1 per thousand and didn't meet the criteria but that would be a lower limit. Now what would the agency as decision maker actually use in deciding whether to go forward with this rule? Would they use the lower limit, would they use the upper limit, or would they use, you know, this point estimate which is kind of the, represents the best estimate at least if the QRA is correct, the best estimate based on the available evidence?

And if the agency, you know, I also appreciate your background in economics and cost benefit analysis because the agency of course would incur some cost in calculating these, you know, in conducting this uncertainty analysis, it would be a reasonably expensive thing to do. Would there be enough benefit in doing this uncertainty analysis to the agency to outweigh the cost to the government and taxpayers?

MS. CANTOR: Okay, so I think that my response stems from a concern about what's the purpose of the analysis. If the purpose of the analysis is to show people, here's the analysis and there is variation and there is uncertainty and so we want you to understand that so that people can actually respond to it. And especially in this comment phase where you're looking for suggestions or alternative ways of thinking about it, you want to lay out the information about the uncertainty.

But if you only present the point estimates then people don't know that, they don't know that it goes from .1 up to 90 and you picked the 54, right?

And I think that's important for people to understand that because they're trying to understand what kinds of suggestions they could make or what concerns they might have about the analysis as it's been done.

With respect to whether or not you finally have an analysis that you put forth and say, well this passes a benefit cost standard because here's the information that we have, then that's a different purpose, right? That's the purpose of saying that, you know, we've decided to go with the average amount, whatever number that you're selecting, and we're using that and that's how we've done our benefit cost analysis.

So I think it really depends on what's the purpose of the analysis. If I'm laying out analysis for a decision maker to try and understand what concerns they might have, but also let's say they're not a decision maker, they're a stakeholder and they want to understand what are the significant areas of uncertainty and why is there uncertainty there, then you've got to lay that out for them in your analysis because otherwise they don't know it.

MR. KOGUT: Okay, I guess I would appreciate your response to the second part of my question at least as to whether a cost benefit evaluation on doing that analysis is even relevant or should it always be done or does it depend on how much it would cost?

MS. CANTOR: I guess I don't think it costs very much to -- you know, if you've done the analysis and you've come up with the point estimates, I think that there are a number of reasonably straightforward ways to have some sort of uncertainty analysis. And even here with the PREA one way you address the uncertainty about the benefits was just to delay them for 10 years, right? So there was a pretty low cost solution to presenting something about uncertainty, but certainly a little bit more could have been done than that and I don't think that's very expensive.

MR. KOGUT: Thank you.

MR. FORD: Ms. Cantor, you talked about maybe there should be some explanation or information concerning cash flow, information in the PREA. Could you talk about how you would do that?

MS. CANTOR: I would, you've got the costs in there, you've got the benefits in there, you can definitely lay out a cash flow. I'm not really sure about the benefit numbers because I didn't look at, you know, going back to the QRA and working, you'd have to work from what are you getting in year 1, year 2, et cetera. But certainly for the cost information there is, it's not always easy to separate because there are some cost items where they have the first year costs and the annual costs and then we can't actually tell what the separate annual cost is to be able to put into a cash flow, but we could probably estimate it from what you've got with the annualized costs.

But my point is that, you know, like the picture tells, you know, is worth a thousand words, when you lay out a cash flow, when you know you have costs and benefits happening at very different times you want to lay that out. It still may be true that the height of the benefits swamps the height of the costs, but you still want to be able to see where those things place in time.

MR. FORD: Concerning other costs that you mentioned, one of them with health and safety costs, for example the ergonomics costs.

MS. CANTOR: Right.

MR. FORD: Do you know of any studies that we could use to actually detail what the costs are related to the ergonomics of using the CPDM?

MS. CANTOR: Well I haven't looked at that yet. I know that there are other folks that are looking at at least the physical issues and impacts.

And once you have that then you can go to the economics literature and it's amazing how many different values there are. I mean you found values for these illnesses and also for the morbidity. The same literature can be looked to for many kinds of health impacts, health injuries.

MR. FORD: Sure, well we appreciate any information you have on the cost for ergonomics in your written comments.

MS. CANTOR: Okay.

MR. FORD: Because I think you said this is a preliminary --

MS. CANTOR: It is.

MR. FORD: So it will be expanded upon in the written comments.

MS. CANTOR: It will.

MR. FORD: Also you talked about the production changes and work stoppages, and then we went into this analysis of production delays when the mines would be out of compliance and there was a number given total revenue loss of $1.8 billion.

MS. CANTOR: Yeah.

MR. FORD: Does that incorporate what you're talking about by production changes and work stoppages?

MS. CANTOR: It really was set up to reflect anything that might happen in response to either nearing or exceeding that, the compliance level. And so if that means, and again what we heard today was that the miners will see they're getting close, something will happen. And what might happen, again what I'm hearing from industry is that production will stop on that MMU, for an hour is like a minimum assumption. So that's one way of operationalizing this kind of production delay that you could have because these things are nearing or exceeding.

MR. FORD: Right. And I also noticed on this same area that then you talked about there would be a learning curve. And I guess your basing that on the fact that the way the proposed rule is structured once the rule goes into effect it would be two years before the level of 1.0 would have to be reached, and a year before that there would be full use of the CPDM, under the proposed rule, in the mines, a full year essentially which there could be this learning curve. And then based on your analysis you said because of this learning curve the $1.8 billion figure would go down to, and excuse me the numbers were kind of small --

MS. CANTOR: Right, right.

MR. FORD: I thought it was like $254 million?

MS. CANTOR: It was, yes, north of $200 million.

MR. FORD: Sure, a considerable amount. And you based that on what you said a conservative estimate. And I think to get that $254 million you said that they would be out of compliance at the same rate that they currently are now.

MS. CANTOR: In 2010, yes.

MR. FORD: In 2010.

MS. CANTOR: Yes.

MR. FORD: Okay, but I guess just a comment, the rate that they're out now is based on using gravimetric sampler that doesn't give you any real time analysis.

MS. CANTOR: Right.

MR. FORD: So wouldn't you think with the CPDM where they have real time analysis that probably that learning curve could be reduced even further than what they are experiencing today using a gravimetric sampler that doesn't produce sampling results until two or three days after the sample is taken or maybe longer?

MS. CANTOR: Right, I don't know. I think that what you might have happening because you are getting that real time information is that you do stop the work on the MMU. And so that could be many more than one hour production delay. And so I think that the issue again is, what are going to be the behavioral responses to this?

So one thing that occurred to me, so when the 2.0 came in, in the early '70s, did anybody sort of track? It seemed to me there might be some historical information here that could be looked at to see how long it does really take them to adjust. And we did notice when we, we had the 2006 to 2010 data, the sample data, and just looking at that, in 2006 it was actually higher, the percentages were higher, you could see a little stepping down, not much, between 2006 and 2010.

So I think that there is probably some data to be looked at here and get a sense of how fast do you really get the adjustment. You not only have a capital adjustment, you have behavioral adjustment that has to be put together to get them in compliance, and when they're out of compliance it's really expensive especially on those long wall operations. So I think that that probably warrants a little more analysis on how they're going to deal with that.

MR. FORD: And I have one other question on the benefits side. You're right in looking at the fact that we did the best job we thought we could with a latency period, and we didn't think we had a lot of information, that's why we chose 10 years. But can you, would you suggest another time period to use, is my first question. And the second question is, could you provide maybe information that could help us better calculate what you really want us to zero in on on this issue?

MS. CANTOR: Well I don't know if you're familiar with the Nicholson model that gets used in asbestos for actually coming up with forecasts of mesothelioma, but if, that model actually works from the current cohorts and it has mortality assumptions built into it, it has turnover assumptions built into it, it distributes workers into different industries. Here your issue is different job categories, but that kind of model, and that model happens to do an amazing job in prediction as well, that might be something to be looked at, that kind of structure. Because that would be one way of actually marrying the existing workforce to your benefits calculation.

MR. FORD: Is that something that you will be formulating in your written comments?

MS. CANTOR: I wasn't going to build that model. It would, you know, that would be a challenge to build a model like that. But I would think that a model like that would be incredibly useful to you, so.

MR. FORD: Okay, thank you --

MS. CANTOR: I will certainly pass along the paper though so that you can see how the model is constructed.

MR. FORD: Sure, thank you. Thank you.

MR. ROMANACH: Ms. Cantor, I just have one question. Will you be providing us with the data and the basis for the data upon which your presentation was based?

MS. CANTOR: With the final comments?

MR. ROMANACH: Comments.

MS. CANTOR: Sure. I believe it's all your data, but yes I will, I'll give you the files.

MR. ROMANACH: Thank you.

MR. THAXTON: I just have a couple of questions and comments. In regards to the number of supersections that you used on your outlay, you indicated that that was a survey of the industry. Is that a survey of the entire industry or only certain people that you had access to?

MS. CANTOR: I didn't do the survey. NMA, I asked them to collect information from their members to tell me the number of MMUs that were part of a supersection, and so they provided that information to me.

MR. THAXTON: So would you be able to provide in your comments that you submit what was used as the definition to determine what those sections were?

MS. CANTOR: Sure.

MR. THAXTON: Because I think you were mentioning when you went through the slide that you were going to change it from supersections to MMUs.

MS. CANTOR: Well just my label wasn't very good on the, they are definitely the count of the MMUs that are part of a supersection, but the way it was labeled it almost appeared that it was the count of the supersections, so I wanted to be clear about that.

MR. THAXTON: Okay, if you can include that, if you can get that, that would be helpful.

MS. CANTOR: Yeah.

MR. THAXTON: The last thing I have is in relation to the number of CPDM units per MMU that you had. You listed on the DO two, for the ODO two, and then 25 percent extra of one for a total of five per MMU.

MS. CANTOR: Yep.

MR. THAXTON: Okay, the two for the DO I assume is because you're assuming a two shifts of operation?

MS. CANTOR: Yes.

MR. THAXTON: On the ODO, where did the number two come from?

MS. CANTOR: Well you have two per shift but you don't have to sample them, in other words you can stagger the 14 days. So you can use the two CPDMs in that staggering. So we have one DO, but you have to have two units for the DOs because you've got one shift going into another shift you have to have the second unit available, and you have the two ODOs.

MR. THAXTON: Okay, but the two ODOs are only required to be sampled 14 consecutive days each, not at the same time or anything like that, over a quarter. So one CPDM could be actually used to collect the two ODOs on two shifts and not need a second unit.

MS. CANTOR: So you would assume that you're not, you're going to split your ODOs, so one ODO being sampled for 14 days and then another one. Then you'll have four, because you'll still have two shifts, right? So does that work out that you, I guess does that make sense?

MR. THAXTON: An ODO only gets sampled 14 days, so essentially in a quarter you've got 12 weeks, you're doing two weeks each, you've got six opportunities that you can use it.

MS. CANTOR: Right, well all right, I definitely will go back and look at that.

MR. THAXTON: Okay, thank you.

DR. WAGNER: And I want to thank you again, Dr. Cantor, for coming in and sharing your information.

MS. CANTOR: Okay, thank you.

DR. WAGNER: The next person who signed up is Jim Sharpe. And I believe I saw him leave about five or six hours ago. And the next is Paul Borchick.

MR. BORCHICK: Good evening.

DR. WAGNER: Good evening.

MR. BORCHICK: I'm on my third revision. It started with good morning, and then good afternoon, now it's good evening.

DR. WAGNER: Unfortunately it's not good night.

MR. BORCHICK: That's the end of it. But I appreciate the opportunity here, and I don't mind waiting around to speak on such an important issue.

DR. WAGNER: If you want to spell your name?

MR. BORCHICK: Oh I'm sorry. Paul Borchick. P-A-U-L B-O-R-C-H-I-C-K. I don't mind waiting around to talk about such an important issue as miners' health. So I am the manager of mine health and safety for CONSOL Energy. I want to thank you for the opportunity to provide comments on the Mine Safety and Health Administration's proposed rule, lowering miners' exposure to respirable coal mine dust including continuous personal dust monitors.

I have been employed by CONSOL Energy for 30 years, I have a BS in mining engineering. I'm the manager of mine health and safety as I said in the corporate safety department. I've held my current position for five years, I succeeded Craig Yanak who provided testimony earlier. For 25 years prior I worked at five different underground coal mines in Pennsylvania and West Virginia in a variety of operations management positions.

I have supervised mining crews on both long wall and continuous mining sections, and as the shift foreman been responsible for the health and safety of everyone on the entire shift. I've worked on several different shift configurations including traditional 8 hours, four 10-hour shifts, and weekend warrior shifts. I've been blessed to work for a company that puts the health and safety of its employees first. CONSOL Energy is a leader in the industry regarding mine health and safety. The message is clear from the highest levels of management, safety has no rank, safety is a value, and most importantly safety trumps everything.

CONSOL Energy supports the goal of MSHA and Assistant Secretary Main to end black lung disease now. We have worked to improve mine health and safety for many years, including partnering many times with industry, labor, NIOSH, and MSHA to find the best ways to make improvements in mine safety and health. Craig Yanak for CONSOL Energy worked tirelessly with the BCOA and the UMWA, including Joe Main and NIOSH, in the development of a personal dust monitor.

They worked through issues beginning with the machine mounted continuous dust monitor through various versions of the PDM to come up with the current configuration produced today by Thermo Fisher. CONSOL Energy supports the PDM technology as a tool to reduce exposure during a miner's work shift. The advantage of knowing real time dust exposures and empowering the miner to take action to correct possible overexposures is a vast improvement compared to waiting one to two weeks for sample results.

I have purchased 22 out of the current 250 PDMs in the industry. I have used the PDMs in mines in Pennsylvania, West Virginia, and Virginia as engineering tools to identify dust sources. I have identified areas where we were surprised to find higher concentrations of respirable dust and were able to put controls in place to reduce these levels.

I have used the PDM to collect personal samples from miners on long walls, continuous miner sections, Part 90 miners, and designated areas. I have gathered feedback from miners who agreed to wear the PDM. Nearly all miners have expressed concerns with the weight of the PDM, the stiffness of the cord, the noise and distraction caused by the PDM, and the inability to safely perform some of the tasks associated with their jobs.

Some complained of the stiff cord catching on equipment control levers on roof bolters where the inability on a long wall to work along shields and the inability to fit in operator's compartments in scoops or shuttle cars while wearing the PDM. Additionally, as heard in the previous testimony by Craig Yanak and Mr. Lovell from Alliance, I know that there are still some technical issues with the PDM.

I recognize that new PDM technology will have growing pains. Time is needed to identify and rectify these issues. Based on my extensive experience with the PDM I know that currently the PDM cannot or should not be used as a compliance sampling device, especially as a single shift compliance sampling device. Additional hard time mine operations exposure is necessary to ensure the durability, accuracy, and dependability of the device.

Also, consideration should be given to changing the design, eliminate the cap light, and review the necessity of the PTO plug to make the device a more ergonomically and technologically improved personal dust monitor. We feel that the PDM technology can best be utilized after the durability, accuracy, and dependability is proven in combination with a weekly dose concept.

The BCOA and UMWA have come to agreement on concepts for the best way to utilize this PDM technology and published a white paper document describing these concepts. I participated in that process. The white paper was submitted and discussed with MSHA and Assistant Secretary Main as well as with the previous MSHA administration. There were some members of this panel in attendance during those meetings.

While the white paper states that these concepts must be considered in their entirety and not by the individual parts, MSHA has chosen to pick only certain concepts to include in the proposed rule. MSHA did not recognize the model crafted by the BCOA and UMWA and thus failed to recognize the full potential of the PDM.

We support the BCOA UMWA white paper, which is included in the testimony given by Joe Lamonica of the BCOA. The proposed rule as it is written is too complex, not easy to understand, and based on data from NIOSH reports whose data is not transparent. We agree that black lung disease has not been eliminated. The data used from the NIOSH X-ray surveillance program that reports an increase in cases of coal worker's pneumoconiosis is occurring is obtained from a voluntary X-ray program that does not fully account for the worker's past work history. It reports result based on current work locations and the miner's occupation at the time of the X-ray.

This voluntary database does not accurately reflect the industry as a whole. There have been repeated requests from the NMA to obtain more detailed data to allow industry experts to evaluate and determine how industry can best address issues to most effectively take action to make improvement and/or controls where they may be needed. But to date the NMA FOIA requests to NIOSH and MSHA have not been fulfilled and time is running out to effectively evaluate the data before the end of the comment period for this proposed rule.

The NIOSH X-ray surveillance data points to specific areas of the country referred to as hotspots for increases in CWP. If these are truly hotspots based on unscientific control database, then these areas should be looked at more closely by MSHA to determine a cause. Simply proposing a rule that covers the entire coal industry is not necessarily the best way to deal with a geographical issue.

Data obtained from the flawed voluntary NIOSH X-ray surveillance program from its inception to present is used to track cases of CWP. It's time to recognize that if we are serious about eliminating disease that the mandatory X-rays need to be given to all miners prior to employment and at specific intervals to best track trends in the disease from a truly scientific database.

This data can be maintained by NIOSH with employee confidentiality maintained. But specific data, such as work location, work history, age, et cetera should be available on a database for scientists to evaluate trends and identify issues necessary to make improvements to eliminate black lung nationwide.

We recognize that the current dust sampling scheme is outdated. The technology used today is the same as originally implemented some 40 years ago. Work schedules originally 8 hours for five days a week are no longer the norm. Sampling a miner for only 8 hours while he may continue to work producing coal after the dust pump is sent outside and turned off is not acceptable.

We support full shift sampling as addressed in the BCOA UMWA white paper, which accommodates all work shift schemes. We also believe that a 50 percent reduction in the dust standard from a 2.0 milligram to a 1.0 milligram must be evaluated further when conducting full shift sampling. I have worked on shifts such as weekend warriors shifts that consist of one 10-hour and two 12-hour shifts to comprise the work week. This 34-hour work week is actually less than a 40-hour week that provides the basis of the current regulation.

In fact, as proposed in the rule full shift

10-hour samples when converted to the ECV would result in a 0.8 milligram standard. Similarly a 12-hour shift would be limited to a 0.6. This would not be feasible for some current long wall or other designated occupation samples with even the best engineering controls. The rule limits methods to maintain compliance to this standard through engineering and environmental controls. These popular shift configurations would not be feasible under the current proposed rule and most likely would be eliminated.

MSHA must recognize that as proposed in the white paper, full shift sampling utilizing the dose concept while maintaining the 2.0 milligram standard effectively reduces the standard to levels below 2.0 based on shift length. The white paper discusses Haber's rule, which simply put is 2.0 milligrams times 40 divided by H where H is the hours worked for that week when H is greater than 40. The value for H can never be less than 40 no matter what the length of the miner's work week is. Thus, the miner's exposure can never be more than the current 2.0 milligrams based on 8 hours for five shifts.

We support the testimony of the BCOA as given by Joe Lamonica including the role of the respirable dust control plan. The proposed rule as written is too complex and will be unmanageable for both operators and MSHA with regards to dust control plans and PDM performance plans. The plans will become so complex under the proposed rule that they will be ineffective.

In comments made by Dr. Wagner and testimony heard in Washington, Pennsylvania, from a former NIOSH physician, black lung disease is preventable. We agree with that statement. They say that the way to eliminate the disease is to eliminate miners' exposure to dust. We also agree with that. But we feel that the methods incorporated in the complicated proposed rule are not the best way to achieve that goal.

CONSOL Energy is sincere in moving forward to ensure that the health of every employee is paramount. We have initiated an employee wellness program that encourages a healthy lifestyle and health screenings to detect health problems early. We believe that in 2011 as new technology emerges it must be considered in order to provide a healthy work environment.

In the mines, it's time to consider that if eliminating CWP requires miners not to be exposed to dust then maybe the time has come to recognize that engineering and environmental controls alone cannot accomplish this goal. We must consider a dust control system where engineering and environmental controls top the hierarchy, but to finish the task of significantly reducing dust exposure personal protective equipment must be utilized.

This dust control system would be most effective for significantly reducing dust exposures to the individual miner. The 1977 Act was written over 30 years ago and states that the use of respirators shall not be substituted for environmental control measures in active workings. We propose to supplement these controls.

When we think of respirators in 1977 we think of dust masks and paper filters. It's time to recognize 34 years later that technology has improved for PPE. The current air helmets in use today did not exist when the Act was written. We feel current air helmets still leave room for improvement, since most miner's air helmets are simply adapted from other industries and include a cap light bracket.

CONSOL Energy is actively working on a project with two manufacturers to develop and produce a true miner's air helmet. The design is based on being wearer friendly in a coal mine environment to meet the needs of the miners. The new miner's air helmet will provide face protection to reduce injuries from projectiles, hearing protection to comply with hearing conservation plans, respiratory protection to significantly reduce exposure to respirable dust, and what I'm referring to as the residual dust left over after using engineering controls, and possibly communications to vastly improve miners' ability to communicate while still being isolated from the atmosphere.

This miner's air helmet as part of the respirable dust control system will further protect the miners from respirable dust. At CONSOL Energy we tend to aggressively develop and provide a miner's air helmet regardless of proposed changes in the dust rule. If MSHA fails to recognize the value of a dust control system and not incorporate it in a proposed dust rule, CONSOL Energy will take the lead to provide additional protection to the miners to significantly reduce dust exposure which will lead to the elimination of black lung.

So in conclusion, CONSOL Energy fully supports working to eliminate coal worker's pneumoconiosis. Our many years of participation in mine health and safety partnerships supports that goal. However, we are disappointed that MSHA has issued this proposed rule without taking advantage of the expertise and many years of experience that industry and labor have provided to come up with a more efficient and workable result.

We support the PDM technology and using the PDM as provided in the BCOA white paper. We know the PDM is not currently proven to be durable, accurate, and reliable enough to be used for compliance sampling. A break-in period is needed to use the PDM for gathering full shift data, verify problems, and determine corrections with the PDM, and to consider a redesign to eliminate the cap light and the necessity of the PTO connection prior to mass production.

We do not support single shift sampling and feel the weekly dose concept as defined in the BCOA UMWA white paper is the best way to utilize this new technology. We again request that NIOSH and MSHA comply with the FOIA submittal by the NMA and provide the data to give industry experts the opportunity to evaluate the information and make appropriate comments.

We feel that reducing the dust standard to 1.0 milligrams or lower for shifts greater than 8 hours may not be the best way to address a problem that NIOSH suggests is geographical. We support full shift sampling using the dose concept as stated in the BCOA UMWA white paper. We agree that eliminating dust exposure would eliminate black lung. But we feel that the idea of engineering and environmental controls alone will not accomplish that goal.

We support the concept of a dust control system that recognizes engineering controls as the top of the hierarchy, but this system must include PPE to accomplish the goal of significantly reducing dust exposures. The development of a new user friendly miner's air helmet is a positive step to achieve that goal. Thank you.

DR. WAGNER: Thank you very much.

MR. NIEWIADOMSKI: Paul, I have just a couple of questions. You in your comments you alluded to that you believe that the PDM is not accurate, that's what you said and I'm just, if that's your position then apparently you disagree with the NIOSH finding which is published that the PDM was found to be accurate as meeting the NIOSH accuracy criteria, because that's the only criteria that's available.

MR. BORCHICK: And my point is, George, that that's very limited amount of data and we have a lot more data now as presented in some previous testimony, and the previous testimony showed some variability in the sampling with the PDM. But I do believe that there needs to be more time to verify this, especially if we're going to propose a rule that requires it to be used for single shift compliance sampling. I don't believe that the accuracy at this point in time has been proven to go that route.

MR. NIEWIADOMSKI: Would you maintain that same position if the agency abandoned citing on single samples and reverted to which we also have both single sample and the weekly accumulated exposure limit, which is comparable, which is exactly the same as the weekly dose?

MR. BORCHICK: I would say that at this point in time the PDM needs more mine duty, hard time, okay, to prove itself as being durable, reliable, and accurate. So I do think that we need to have some more time, you know, before the proposed rule is implemented.

MR. NIEWIADOMSKI: One final question. You had mentioned that at least CONSOL supports the recommendations that are outlined in the white paper, okay? Do you feel that the rest of the industry also supports that or just the members of the BCOA?

MR. BORCHICK: Well I can't speak for the rest of the industry, George.

MR. NIEWIADOMSKI: Okay, but the BCOA is fully behind that?

MR. BORCHICK: Well we had a lot of work and time and considerable effort with the BCOA and the UMWA on that committee that came up with the white paper.

MR. NIEWIADOMSKI: Okay, thanks, Paul.

MR. THAXTON: I only have one question, Paul. In relation, you were talking about considering and using a PAPR as a means of control or additional supplemental control to engineering controls. You, all PAPRs basically are battery operated, they have a unit built in either to the helmet itself -- or it's a battery unit that's worn on the belt. Have you evaluated the wearing of a PAPR if a person is also going to be required to wear a CPDM, to how that would affect the miners? And if so could you provide us your thoughts on that and what you think that would, how it would impact them in your final responses to us?

MR. BORCHICK: Sure. My comment here in my testimony was that I do believe that CPDMs should be, eliminate the cap light from it, okay, so and, you know, we need to think out of the box per se on the development of a new miner's air helmet, okay? So there is, technology has improved from 30 years ago, whenever these things first came out, and it's time for MSHA to recognize as Joe Lamonica testified PAPR as, a miner's air helmet as an engineering tool, engineering control, okay, and not just a respirator.

MR. FORD: Mr. Borchick, you said that right now CONSOL purchased 22 CPDMs that they have been using?

MR. BORCHICK: Yes, sir. I have, we purchased 12 CPDMs in June of 2009, okay, and those were some of the first ones that were made. And we purchased 10 more CPDMs in September of 2010. And we have them distributed amongst our coal mines where the dust inspector at the coal mines uses it as an engineering tool and also to try to collect data and introduce it to the workforce and show the benefits of what the technology is.

MR. FORD: All right. In how many mines are you using those 22 CPDMs?

MR. BORCHICK: Well as I said they are split up amongst our mines, so that would be around eight, eight or nine mines.

MR. FORD: Okay. Can you talk a little bit about with your experience in your mines using these

22 CPDMs and in relationship to their durability?

MR. BORCHICK: Yes. Well the first 12 CPDMs that we purchased, I don't have the exact number but I'm going to give you the ballpark off the top of my head, I believe at least 10 of them have been sent back for repair, and two of those have been sent multiple times. There were a variety of issues. There were I think three times where we had repeat issues, and then other ones were different.

MR. FORD: Okay, thank you. I just want to get an understanding, I think you're saying, correct me if I'm wrong, that the CPDM is not reliable to use for compliance sampling but you would consider it to be reliable to be put in the mines now as a instrument to collect data, in other words to assess future ways to handle overexposures?

MR. BORCHICK: At this point in time I'm comfortable with the CPDM as an engineering tool to identify dust sources. I'm not comfortable at this point in time of it being used for compliance sampling. But I do believe that working along with the manufacturer and getting some more industry wide exposure for these things we can overcome those issues and the PDM can be used for sampling as designated in the UMWA BCOA white paper.

MR. FORD: Thank you.

MR. BORCHICK: Okay.

DR. WAGNER: So you're, how long do you think it's going to be before the CPDM can be used effectively as --

MR. BORCHICK: As long as it takes to make sure that it is a reliable, durable, and proven device.

DR. WAGNER: Any idea? I mean you've been working with it and on it for a long time.

MR. BORCHICK: You know, there are issues that, new issues that raise their ugly head periodically and I can't really forecast that on how long that will take until those cease to exist.

DR. WAGNER: What do you suggest be done in the interim between now and when the CPDM is able to be used in your estimation as a compliance tool?

MR. BORCHICK: Well, you know, as I stated we don't deny that there are still cases of black lung. But those cases of black lung had not necessarily been from the last two, three years. We need to get this right this time so 20 years down the road as they testified in some earlier things when they look back at it and we start to really realize the benefits of whatever system we put in place on a respirable dust control system that we made an improvement.

DR. WAGNER: You suggested that miner's helmets be, the PAPRs be able to be used as part of a dust control system, you said as a supplementary system for dust control, that's the word that you used, supplementing the engineering controls. To what level should the engineering controls bring the dust exposures down before the supplementary controls are to be used?

MR. BORCHICK: The engineering controls should top the hierarchy of controls for the system. I think that is dependent on whatever's feasible for different mining conditions. Since mining is variable and mining conditions change from day to day, sometimes within the shift, and the engineering controls need to be as feasible as they can be to control the dust in the atmosphere. But they will never eliminate it all, and as I've heard you say the way to eliminate black lung is to eliminate the exposure to dust, and I don't believe that engineering controls alone will accomplish that.

DR. WAGNER: Actually I said control the exposure, not eliminate it.

MR. BORCHICK: Thank you.

DR. WAGNER: If we're going to eliminate it then there are a lot of other consequences to that.

MR. BORCHICK: Okay, I didn't mean to put words in your mouth, but we agree about that.

DR. WAGNER: Yeah, no but basically the concept is reduce the exposure if you want to reduce the disease. Anybody else on the panel have any other questions? And I want to thank you again for your presentation. We'll look forward to the information that you are able to provide, including, you may not have intended to, but if you do have specific information about your experience with the CPDMs in your mines that you're able to summarize for us I think it would be a useful addition to that that's being provided by the companies.

MR. BORCHICK: We intend to provide written comments by the end of the rule making.

DR. WAGNER: Yes, terrific, thank you very much. The next speaker who signed up is Linda Raisovich-Parsons. If you're both going to speak please identify yourselves for the court reporter.

MS. RAISOVICH-PARSONS: Good evening. My name is Linda Raisovich-Parsons, spelled R-A-I-S-O-V-I-C-H hyphen P-A-R-S-O-N-S. And I am here today on behalf of the United Mine Workers of America. I have worked in the coal industry since 1976, first as an underground coal miner, then a mine inspector, and currently as a deputy administrator for the UMWA's Department of Occupational Health and Safety.

We would like to thank you for the opportunity to address an issue that has been a priority for the UMWA for many years. For too long we have watched our nation's miners suffer and die from black lung disease, an illness that is unnecessary and totally preventable. We are grateful that MSHA has taken these steps towards serious measures to prevent this unnecessary suffering and death.

I grew up in a small coal camp in southern West Virginia and personally watched the pain and suffering this horrid disease inflicted on my community as well as my own family. As a young woman I lost my father at the age of 56 to black lung and heart disease, creating a hardship on my family and the loss of our dad far too soon. So this issue is a personal one for me as well as a professional one.

I should begin by saying that the UMWA is overall supportive of MSHA's proposed rule and is glad the government is finally taking concrete steps towards preventing this dreadful disease. Black lung has crippled and killed tens of thousands of miners over the years. According to NIOSH studies, between 1987 and 1996 at least 18,245 deaths occurred from black lung. The latest studies show that after a long period of declining incidence of black lung, recent surveillance data indicates that it is rising again.

Coal miners are developing black lung at relatively young ages below 50 years. What is most disconcerting about this is a connected increase in the years of potential life lost due to black lung in these young miners. So not only are the cases of black lung on the increase, but miners' lives are being shortened more so than ever. Adding insult to injury, those filing claims for Federal black lung disability compensation face a harsh and unfair system. Nearly 87 percent of claims are rejected.

The UMWA is more than pleased to see the Federal government finally step up after years of senseless pain and suffering inflicted on the mining community and take a serious step towards preventing black lung. However, even though we are supportive of most of this proposal there are a few issues with which we disagree. I will summarize our primary concerns.

The first issue which troubles us is the sampling program continues to be placed in the hands of coal operators. The government's regulatory program intending to protect miners from exposure to unhealthy coal mine dust has failed to protect miners through the years. Since passage of the Federal Mine Health and Safety Act of 1969, the coal mine dust sampling program has been the subject of much criticism.

Reports of cheating and fraud in the coal mine dust program with miners exposed to unhealthy levels of mine dust has been commonplace over the years. In 1971 and 1975, U.S. General Accounting Office and National Bureau of Standards reports document serious problems with the mine operator controlled coal mine dust sampling program. The reports identified widespread fraud in the program.

Since 1990 over 160 companies and individuals have been criminally prosecuted for fraudulent coal mine dust sampling in the nation's coal mines. An in-depth investigative report published by the Louisville Courier Journal in 1998 cited widespread corruption with the coal mine dust sampling program. Miners and their representatives on numerous occasions have also provided evidence on the flawed coal dust program.

For decades miners and the UMWA have

demanded that the respirable coal mine dust program be reformed. As far back as 1977 and 1978, miners testified as public regulatory hearings demanding major changes in the program. Among the changes miners sought were full miner participation to oversee the coal mine dust sampling, a government takeover of the sampling program, and devices installed in the mines to constantly record coal mine dust levels.

We applaud the agency's requirement of the use of the continuous personal dust monitor in response to one of those concerns, but the UMWA still believes the sampling program should not be left in the operators' hands. We expect that most coal companies would do the right thing to comply with the new standards. However, even with the use of the CPDM we know that there are renegades in the coal industry who would find a way to cheat the system.

The UMWA wants to see the agency play a bigger role in the sampling program and to at least adopt the dust advisory committee recommendation for government funding for such program and giving MSHA a bigger role in the dust sampling process. Paragraphs B and C of recommendation number 16 of the dust advisory committee recommended, B, "The committee believes that any MSHA resource constraints should be overcome by mine operator's support for MSHA compliance sampling."

"The committee recommends to the degree that MSHA's resources cannot alone serve the objective identified resource constraints should be overcome by mine operator funding for such incremental MSHA compliance sampling. One means for obtaining this support could be a reasonable and fair operator fee based on hours worked or other equivalent means designed to cover the cost of compliance sampling. Any operator fee program should include an accountability system to ensure the uniform applicability of the program throughout the industry. The fees should only be utilized for the specific purposes of required compliance sampling."

Paragraph C, "The committee considers it a high priority that MSHA take full responsibility for all compliance sampling at a level which assures representative samples of respirable dust exposures under usual work conditions. In this regard, MSHA should explore all possible means to secure adequate resources to achieve this end without adverse impact on the remainder of the agency's resources and responsibilities. Compliance sampling should be carried out at a number and frequency at least at the level currently required of the operators and MSHA. The miner's representatives would be afforded the opportunity to participate in these inspection activities as provided in Section 103(f) of the Mine Act."

The UMWA believes that one of MSHA's highest priorities must be to restore the confidence of miners and mine operators in respirable coal mine dust sampling program. To accomplish this, we believe that MSHA must take full responsibility for the task of compliance sampling in lieu of the proposed system under which operators will still be primarily responsible for carrying out such compliance sampling.

The second problem with the proposed rule is with the formulas set forth in the rule for calculating equivalent concentrations when a miner works an extended shift. These formulas are too complicated and confusing. Although our nation's miners are very skilled at their trade and the most productive in the world, most are not mathematicians. The Union would recommend that these calculations be simplified and set forth in an easy-to-read chart.

As proposed in the rule, we fear that miners would not be able to figure out their exposure limits when working extended shifts. The UMWA appreciates the agency taking into account the fact that most miners work more than an 8-hour shift, but there must be a simplified way to arrive at the permissible concentrations than that in the proposed rule.

The last problem with the proposed rule falls under Section 70.208, paragraph H. Under this section, when an operator is unable to maintain compliance with the applicable standard for an MMU and makes the determination that all feasible engineering or environmental controls are being used, it may request approval through the district manager to use supplementary controls including worker rotation to reduce affected miners' dust exposure.

The UMWA understands that the intent of this proposal is to protect the affected miner from the dusty environment. However, this practice would be completely contrary to the requirements in the spirit of the collective bargaining agreements in place at all UMWA represented mines. Under the UMWA collective bargaining agreement, all jobs are posted and awarded on each miner's seniority at that mine.

The miner's seniority and job bidding rights are cherished, revered, and held as a sacred right of all miners working at unionized operations. An employee who has bid for and been awarded a particular job expects that he will work in that position. To rotate a miner from their job classification for six months is totally unacceptable. The UMWA has historically agreed that respirable dust must be controlled through engineering and environmental measures. Rotating a miner out of their normal job is not an adequate solution.

Another problem with this provision is that it gives the operator the explicit right to determine that all feasible engineering or environmental controls are being used or have been exhausted. When the operator determines that it has done all it can to control dust through engineering or environmental controls, it then simply asks the MSHA district manager to approve a plan that permits worker rotation.

The UMWA questions what role MSHA plays in making the determination that all feasible engineering and environmental controls have been exhausted. That decision must not be left entirely up to the operator and MSHA must play an affirmative role in determining that all such measures have actually been exhausted to control the dust through engineering or environmental means.

Miners' representatives must also be

involved in this process. Worker rotation is not the answer to controlling respirable dust. Simply rotating workers would only expand the number of miners exposed to inappropriate levels of coal dust instead of addressing the problem by reducing the dust. All shearer operators, shield operators, and miner operators are the prime candidates who would likely be rotated from their job classification to another position.

MSHA must take a more substantial role in requiring operators to implement all feasible means of engineering or environmental controls and provide expert advice to the operator on how to achieve this goal rather than simply reviewing requests to rotate miners. Permitting workers to be rotated out of their normal job will not solve the problem but simply exposes additional miners to excessive dust and allows the mine atmosphere to remain too dusty. This is not an acceptable solution to control dust and the UMWA opposes this part of the proposed rule.

In sum, the UMWA is generally pleased with the proposed rule and is supportive of the majority of measures the agency has taken to reduce miners' exposure to respirable dust. We are delighted that the Federal government is finally willing to take serious steps to prevent black lung. However, we believe that MSHA must be in charge of the sampling, the calculations in the rule must be simplified, and miners must not be removed from their jobs as a means for preventing their exposure to dust. Thank you.

DR. WAGNER: Thank you very much. Let me turn to the panel.

MS. OLINGER: You've heard several Commenters say that X-rays should be mandatory. In fact, Mr. Borchick who just gave his testimony before you mentioned that the mandatory X-rays would be possibly maintained by NIOSH and remain confidential. Does the union have a position on the possibility of X-rays being mandatory?

MS. RAISOVICH-PARSONS: I would defer that question to Dennis who is our administrator.

DR. WAGNER: So, Dennis, do you want to introduce yourself?

MR. O'DELL: Sure. Dennis O'Dell, D-E-N-N-I-S O-apostrophe-capital D-E-L-L. I am the administrator of occupational health and safety with United Mine Workers. That's something that we're still looking at. Miners today still have this fear that X-rays will be used against them to blackball them from the industry if it falls in the wrong hands.

So we're still having this debate within us as to whether we think it should be mandatory and if it's something, I understand HIPAA laws and how those things should be protected but let's not fool ourselves, the operators control the insurance that pays for most of these X-rays so they're going to have control, if they really want to they're going to find out what somebody's, whether they have good lungs or bad lungs, what have you. So the debate about that issue is something that's still ongoing within us.

MR. ROMANACH: Okay, thank you.

MR. NIEWIADOMSKI: I know you had mentioned some issues that you have with the proposal but one thing that I didn't hear and maybe I missed it is, what's the UMWA's position on lowering of the standard from 2 to 1 milligram?

MS. RAISOVICH-PARSONS: We would support that.

MR. NIEWIADOMSKI: You would support that?

MS. RAISOVICH-PARSONS: Yes.

MR. NIEWIADOMSKI: The other point is there seems to be quite a bit of confusion about this equivalent concentration, about the miner would know what the standard is. Well the intent of the proposal is the standard is 1 milligram except if it's reduced due to quartz, but there would be no adjustments. To account for extended shifts you can do one of two ways, you either reduce the standard because you're working longer shifts, or you maintain that standard, have it fixed, but increase adjusted concentration upwards.

And that's what we've decided, because MSHA will set the standard, the operator will not set the standard, and that's what's going to be programmed in the PDM. He's going to program the shift length and the PDM will automatically make that adjustment. But the standard will be fixed as 1 milligram or if there is more than 10 percent quartz or whatever, more than 100 micrograms of quartz, then the standard would be reduced by MSHA, okay? So that's the, there is no recalculating the standard based on the shift length. I have nothing else to ask.

MR. THAXTON: I have just one question. In regards to 70.208(h), the supplemental controls, that is set up right now for the initial two years of the proposed rule as part of a phase-in period and it's only to apply to those places where they would have difficulty for short periods of time. Is there an alternative that you all have considered that could be utilized in that kind of situation to address those types of exposures? And if so could you share with us or provide us comments in relation to what kind of program you think would address that?

MR. O'DELL: Yeah, Bob, I was going to give some comments after Linda was done and some of what I have to say may clear up, you know, some of the questions like you're talking about now.

MR. THAXTON: So would you like us to --

MR. O'DELL: So I don't know if you want me to go ahead and give my spiel.

DR. WAGNER: Why don't we, we'll hold our questions, you give your --

MR. O'DELL: I heard you say earlier it made it difficult not to be able to question the individuals after they gave a presentation so I was trying to be nice.

DR. WAGNER: Appreciate that, yeah, go ahead.

MR. O'DELL: If you want I'll go ahead.

DR. WAGNER: Please do.

MR. O'DELL: Okay. Again, my name is Dennis O'Dell, D-E-N-N-I-S O-apostrophe-capital D-E-L-L. I have 30 years in the industry, close to 20 years as an underground coal miner and 14 years working for the UMWA, five of the last years of which I've been the administrator of occupational health and safety. I want to thank you for the opportunity this evening to speak on this very important matter.

You've heard from industry most of today and now you're going to hear a little bit from labor, you heard me testify in Beckley and in Washington, PA, and I would like to offer a few remarks today based on some of the things that I've heard presented today. I also want to point out that it's important to remind you that the UMWA represents the miners in this country that account for 51 percent of the coal produced in this country, and I think that that's a valuable piece of information to share with you.

First, over the period of the hearings I've heard many industry representatives suggest that the CPDM be used as a personal dust monitor. And I touched on this a little bit in Beckley, and I suggested there, or it may have been Washington, PA, but I suggested there if the agency chooses to follow this path then you're going to have to place this unit on each individual miner working at that mine.

I strongly believe that because no miner can go without knowing what his exposures can be. But there's another way to get around that. We have to monitor miners 24/7. So the other way that you can get around not placing PDMs on each individual miner is sort of like what we do today, and that's place a PDM on occupations identified as the dustiest concentrations as well as areas of the mine where high concentrations of dust is generated.

This will help to ensure us to protect the rest of the workforce as well as the mine environment as mandated by the Mine Act. We have a lot of miners today who, erect stoppings, concrete blocks, rock dusters who work in the returns, we have belt cleaners that work on belt lines, and a lot of these areas are dusty. They're not thought of as dusty because they're not right up at the face, but in reality I could tell you as a miner working these jobs that sometimes those areas are dustier than some of the areas that we actually produce coal. So if we're going to move forward with that then I think you need to look into those areas as well and I think there is language in there that allows you to look at those various areas and occupations.

Next, over the period of the hearing we've heard presentations given on the samples taken over previous years as being used for data. I've said this before and I think it's important that we reiterate this, that the data that we're looking at, it doesn't really reflect what the miners' exposures are 24/7 as what we can collect with the PDM. This, it only gives results of samples that are reflective of averages, some and in many cases half of the production, possibly best case scenario samples that are taking four to six hours of the miner's actual time of being in the coal mine while they're mining.

My point is this, that if we really want to protect miners from getting black lung then I think now's the time to seize the opportunity to use the CPDM and collect the real data to set a standard that is protective of miners as we move forward with this rule. We've heard presentations of some of the failures of the CPDM, and I don't know why this would surprise anybody in this room or anywhere else.

When we first started using the gravimetrics I mean you heard people from industry even suggest, my counterparts, that we had some problems with it, the gravimetrics. But we overcame those issues when we first started using those. Many of the problems were fixed because we rose together as a mining community, labor, government, mine operators, and we tackled these problems, and we helped put some measures in place that are used to protect miners today.

A lot of the work and the issues that have been pointed out as problems by the CPDMs have already been pointed out and so much of that work's already been done to address those issues, as proof given by the presentation of the operators today. So rather than continuing to be hung up on the flaws of the CPDM, let's move forward to get them fixed. I'm sure that Thermo once they find out what all these problems are that they'll address these very issues.

On the single shift sampling, I've heard this argument being made about it not being accurate, and this really baffles me. If the CPDM is made to where the recordings that it takes is going to be accurate, like for example our CO monitoring systems and our methane detectors and methane monitors that we use on our equipment today, what we've done is we've built in a means to keep this equipment calibrated. You know, we've built in safety factors to make sure that they work properly and to make sure that we're getting the right information so that we can control things such as methane explosions.

Then, you know, with that mind set we should be able to fix the problems with the CPDM. We need to approach it the same way as we do approach other monitoring equipment. I stand before you today to tell you that we have a lot more miners dying from black lung than we do miners dying from methane explosions. And miners deserve the same care and protection to lowering dust as we do in controlling methane and CO and what have you.

If the industry, and I suggest this to, make this argument all the time, if the industry had waited on new mining machines to be perfected, we'd still be hand loading in the mines today like my grandfathers did. But we continue to have problems with the continuous miners, long wall shears, bolting machines, and other machines, much like what I saw 34 years ago when I started in the industry. But we've worked through those issues and we continue to mine coal, and now we're the most productive and probably the safest producers of coal in the world.

I heard some discussion about PPEs as offered by the industry to control dust. We've never been a big fan of that being a tool used to control miners' exposures. And the reason I say that is because it offers a false protection, and it actually goes against the Mine Act as well. If you go back and you read the legislative history of the Act, which we did, you'll see that that should not be a tool used to determine what coal mine dust exposures will be nor control it.

Many of you have been underground on tours or as part of your job to gather data or whatever, but I would offer you, try working 10-hour days six days a week with an air stream helmet or a respirator in a coal mine. I mean, actually do labor, I mean really work like miners work. Better yet, go back to your office and wear a miner hat with hearing protection, a respirator and air stream helmet, a self rescuer, and a belt, and do that six days a week every week 10 hours a day for the next 20 or 30 years. And I'm sure you're not going to suggest that that's a way that miners should have to be treated either.

Let miners work in a safe environment where the respirable dust is controlled much like we are exposed to in a building like this today. To say in one sentence that the CPDM, I heard this, I get amazed, that it's too big and heavy and bulky, and then suggest to place more equipment on the miners, it just it doesn't make any sense to me. You know, you can't have it both ways.

I'd like to talk a little bit about what I heard on ventilation systems today. There was some question about if this rule were to go into effect that they were concerned that they would have a hard time complying and that leakage, air leakage would be a problem. It was pointed out as a problem because the mines are going to have to, they will have to increase air in some areas, but I would suggest to you that if we went back to the days of when I started in the mine and we used good solid ventilation controls rather than these cheap tin stoppings that we use today, it would be easier to control the leakage that we see currently.

We have to, if we're going to move forward in a new direction we have to change. People talk about thinking outside the box, well thinking outside the box also means that we need to look at better means not only ways to get to controlling the dust but better ventilation systems like real concrete stoppings that don't leak. I mean seriously, you guys have seen these tin stoppings that leak and cause problems and things like that. So let's look at everything if we're really really serious about the problem.

I get a little bit, you know, there was some passion, we heard some passionate speaking today by some of the folks, some of the doctors that were on the panel before, and I can understand that because I also get very passionate when it comes to this. I heard one doctor say that there was a problem with risk analysis and there may not even be a problem with the rise of miners' exposure to dust.

Well it took me back to the times when John L. Lewis used to be our president. About that time operators used to tell my grandfather as I'd sit down as a young kid, you know, and they'd tell me stories when they'd come home from the mines and I'd sit there as would get ready to eat dinner or whatever, I remember especially my grandpa, my grandpa Frielin and my grandpa O'Dell both worked in the coal mines and I can remember my grandpa Frielin, he was a big man, and I was probably, I don't know, eight, nine years old something like that, but he told me that operators told him that coal dust was good for him.

I mean I seriously hope that we're not going back to a time period where people were trying to make us think that coal dust is actually good for us and that there isn't a problem. That's why, and you guys know this irks me when we talk about risk assessments, I really don't think risk assessments are good signs when it comes to this, and hearing those kind of things kind of reiterate that.

I have no fancy charts or graphs to present to you today. I'm not a doctor. But what I am is what you see, I'm an experienced coal miner. I've been a coal miner all my life, 34 years. And I continue to witness real miners, not numbers, I'm not talking about any charts or anything, what I do is I go back in the coal fields and I witness real miners, real people just like we are today sitting in this room, hooked up on oxygen bottles.

And I see some of those, my family members and friends in my community who are dying today of black lung. That's the real -- black lung continues to kill miners and that is absurd in this day and age. We sent people to the moon, we can control and do all kind of things, but to let miners continue to die because we can't protect them from coal dust is sickening to me. The fact is respirable dust destroys lungs and it's irreversible. No dispute on that.

Fact, between 1987 and 1996 there were at least 18,245 deaths that occurred from black lung, and possibly even more undetected as heart attacks or whatever because autopsies weren't requested by their family members. Fact, deaths of black lung are on the rise with miners at relatively young ages below 50 years of age.

Fact, 87 percent of miners' claims for black lung benefits today, today in 2011, are denied. 87 percent, that's a huge number, huge number. That means 17 percent of the miners that receive black lung benefits are the only ones being identified as a problem. I mean think about that, 17 percent, 83. Here's a thought. How about we as an industry, and I believe that many folks in the industry would agree with me on this because, honestly I'm not cutting on industry because I think there's a lot of reputable operators out there that want to do the right thing and their hearts are in the right place, we may disagree on how to get there but I don't think they want to send people into the coal mine to get hurt on a day to day basis.

But here's an idea. Take some of the money that's paid to fight these black lung claims. Let's acknowledge that yeah it exists and it's real, and use those funds to actually fix the problem that causes the disease. Now I know you can't do anything about that, that's a message for my friends behind me. I truly get insulted by those who are willing to turn their heads and deny what I as well as other miners witness or live with on a day to day basis. It infuriates the hell out of me.

I agree with the one statement made by the doctor who was up here before me, and when he said, we do have to be careful not to fool ourselves, I couldn't agree 100 percent more. The doctor also said the confidence levels of the data is embarrassing. Well I find that seeing miners continue to die of black lung disease today is even more embarrassing. I could have brought in to you today several doctors from black lung clinics to dispute everything that you saw today.

We all know that science shows figures and figures show things and doctors can say one thing and another doctor can dispute it. We've all been out and we've seen this whole debate go back and forth where, you know, you hire somebody to say what you want that's what they're going to say. If I hire somebody to say what I want, that's what they're going to say. I mean we know that that can be done.

But I was really hoping that we've got beyond that to where I didn't have to bring in doctors today to try to dispute things that the industry really knows what's going on but they want to present some problems to try to slow down the process of getting this rule passed. I hoped that we were really more serious about actually doing something to protect miners from dying of black lung, not go back to the days where we're told that dust is good for us.

I hope this isn't the case on the proposed rule. I hope I'm not hearing what I think I'm hearing, that it's flawed flawed, that it doesn't exist, pull the rule, black lung cases are overexaggerated. I hope I'm really not hearing that. Can dust be controlled by air and water? Yep, it can. But only if you put good, proven mining methods and true ventilation controls and you don't take the cheap way out of mining and you don't take shortcuts.

How can I say that? Mine operators have told you and they have told me that they're in compliance today with a 2-milligram standard. And how are they doing it? They're doing it with air, they're doing it with water. What else are they doing? You be the judge. Unless we're lying about the samples, and I don't think we're doing that. To dispute that, it would raise accusations of fraudulent samples, it would raise questions of operators lying.

And we've been down that road before, did that, proved it in the past, don't even want to go back there. I'm 55 years old and I'm tired of fighting them battles. I think we're beyond that to where the industry's in one bunker and I'm in another bunker and we're shooting at each other. We've gotten to a point in time that we need to work together to address this problem, not deny it.

I always find it amusing when I'm quoted by someone on issues that we agree on. I heard people say, Dennis O'Dell said, I heard that a couple times today. It cracks me up, you know, when people do that. And I'm not saying that's a bad thing because, you know, us and industry do agree on some things. We probably work more together today than we have ever in the history of time, and that's a good thing, because we all have the same, you know, and what we want to do is protect miners so that at the end of the day they can go home safely to their family members.

I wish they'd quote me on the issues that we strongly disagreed on. But with that, let me refer back to some of the work that the union and the BCOA has been able to do. There were a number of items as you heard my partner Joe Lamonica speak to that we could come up with as a concept of ideas to move forward. We still do not agree 100 percent, and there are a few items even in the white paper that we have not agreed on 100 percent as set in stone, but we thought it was a good starting point on a concept to help protect miners' exposure.

I heard some arguments over single shift samplings. If we have a machine such as a CPDM where we can monitor 24/7 and not wait weeks for the results, then it's a no-brainer. See, if you see the exposure as going over whatever the exposure limits are set at, then correct it at that point, because this tool has the capability to do that.

And come on, I heard some statements about overexposure when the roads are dusty. Wet down the roads. I mean that's mining 101, I learned that as a young red-head miner, if the roadways are dusty water them down to keep the dust from. I heard somebody say that if the floors are dusty when a lamp man's sweeping the floors, well believe it or not there's this fabulous little green dust stuff that they throw on the floors when they sweep that keeps that dust from, I mean they did it at -- where I worked. The lamp man was probably one of the laziest guys I ever worked with but he threw the green stuff down to keep the dust from coming up. So it can be controlled.

And if those are the issues, then we've got bigger problems than what we think. There were some jokes made today about twisting words about the use of administrative controls. And the statement was made that it would disrupt production. Well in reality, initially it may. But good solid mining plans outside of what we do today will overcome these setbacks and losses, and we'll find ways to get our production back up after we've tackled these issues.

I would say that the tradeoff on black lung compensation would offset some of the cost, but I've already stated that 83 percent of the claims are rejected. But let's look at even 17 percent that are awarded. This could be a huge cost saving on medical bills and claims made, to help us move forward with this process. And so we heard miners don't want to wear the CPDM 24/7. Well this, I have to tell you it's true. My guys have made complaints to Cecil Roberts and Dan Kane and Linda and I about them being big and bulky and uncomfortable.

And we're not going to deny that our miners don't want to wear the CPDMs as they are today. You know, we're stubborn, we're a stubborn bunch of folks, coal miners are, and change is hard for us to accept. But as many operators have mandated as to their company policies that we wear gloves, glasses, hearing protection, we've learned to adjust and we probably have saved many eyes, fingers, and improved upon hearing.

When we put canopies on equipment, hey, we fought it, I can remember fighting it. But, you know, it saved miners from being crushed. When we told miners that they would have to wear hard hats and metatarsal boots, I'm sure we saved a lot of scraped heads and smashed feet were avoided. My point is that the problems on the CPDM, Thermo has heard our concern and I'm sure that they will work on making it more worker friendly.

I was sitting in the back and, Greg, I heard you get Bruce and his panel to admit that samples currently today are not a true representation of what miners are actually exposed to. Bruce said he thought the figure was somewhere around what miners, what we're seeing is 8 to 12 percent of miners' annual exposures, that's what the data is that we've collected so far. And Joe when he was here he reiterated, he spelled that out for us, explained to us that yeah it is 12 percent based on a 40-hour work week.

Well my educational background as an elementary education teacher tells me that if we have miners today being diagnosed with black lung on a 2-milligram per cubic meter 8-hour standard, it only makes sense that the standard needs to be reduced. That is of course again if we're not lying on our samples. And while this debate may seem healthy and fun, let's not forget what our real goal is.

To suggest that we do a study because now we think that the Brits had it all wrong is quite frankly to me absurd. Does the 2-milligram standard work? Must not because miners are still getting black lung. That's based on the way we collect samples today. To say let's go back to the '80s where many cases have dropped off to what we see today may not be reflective either, either because the burden again is almost impossible to overcome to prove miners have this disease. I already gave you those figures, remember I told you earlier 87 percent of the claims are denied. It's not reality.

We probably do have a larger problem than has been recognized by any of us in this room. I need to go back again to what was presented by an individual earlier, put them in a respirator. Well I would agree that some PPEs that we use today have been helpful, such as I spoke about, like glasses and gloves and hard hats and metatarsals. I would strongly disagree that respirators is an answer to controlling miners' dust exposure.

Should we make them available for use? Yes. Should we use them as a means to set a respirable dust standard and control dust or miners' exposure? No. Coal mines are different than any other industry where respirators are used. In most cases we're in deep underground mines, the air is provided by fans, and dust generated where you simply can't just open a window to get rid of it, it's there.

Plus the same dust that is in suspension that contains the particles that we inhale that causes us to get black lung, also there is dust produced that's suspended along with that that will cause coal mine explosions. So my answer is to control one will help control the other. I kind of jotted this down at the last second just as everything so I'm kind of rambling back and forth, so I hope I'm making some sense to you, but I wanted to ask you a question because you've asked it repeatedly today, and it's about the accumulated dose exposure for a week and single shift samples.

And I guess my question is, if I work as a miner for 20 years and I'm exposed let's say to 4 milligrams on one day once a week for 20 years will it harm me? Does anybody know the answer to that? I mean I don't, but it's something that I would like to know. I guess if we are going to educate and empower miners to stay below whatever standard that we come up with 24/7 then that argument doesn't even need to exist because then there will be no overexposures, we'll have a means to correct it immediately.

Let me comment on PAPRs. Yeah they give some relief, but yes they are also of a false protection. Miners do lift the shields because they get dirty from the sprays, they get dust on them. First thing miner normally does is most of the PAPRs have a sleeve that goes around your neck, you know, to keep the outside air from coming around. The first thing we do is we rip that scarf off. So now the integrity of the PAPR has already been destroyed because those scarves that's supposed to keep the dust out is now going to, we're going to be exposed to it.

So there is a false protection when miners wear these. And let me tell you this. Nobody wants to talk about it, but most guys that I know, I did it when I worked in a coal mine probably the entire 20 years I was there, they rub skoal or chew tobacco. I did it, you know, it's dry sometimes, you need to do it. And so we're constantly lifting the shield up to spit. You ever swallow that stuff? It's sickening, make you puke. So we have to figure out a way to spit.

Now you're not going to change that. I would hate to be the person that tells miners that they can no longer chew tobacco or rub snuff. And so if you're going to make PAPRs as a means to say that we're going to control coal miner respirable dust you're going to have to tell them, leave the scarf on and you can no longer lift it up to spit. Good luck with that. I know these guys.

Let me talk about some of the things that the union and the BCOA have suggested as a starting point. Joe laid it out, Joe Lamonica laid it out, and we did do a lot of work to try to develop something for us to us as a starting point. And as he said we had addressed the previous administration with our ideas and we addressed this administration with our ideas, but we kind of felt like a lot of those things we talked about fell on deaf ears.

So let me add this if I may. And this is just an idea and I may say something different with our written comments, I'm talking out loud. Let's go with the 2-milligram standard based on all hours worked on a weekly accumulated exposure. Implement a standard based on all hours worked on a weekly accumulated exposure, 2-milligram, this is what I'm talking about is a starting point, 2 milligram 8 hours, 1 milligram 16 hours, and all increments in between for full exposures of what miners are exposed to for every hour that they work.

While we do this, take 12 months or 18

months or whatever we think we need to do to gather true data with the PDM to see what is actually achievable. But as an enforcement, I'm going to probably hear rumbles about this, as an enforcement use the single shift sampling for compliance while gathering this data just to keep everybody on the straight and honest.

After that time period to collect the data, then we can look at what is actually achievable and protective for miners. No rotating miners or respirators will be needed at that point because the industry has already told all of us that they're complying currently without the use of these methods, so there would be no reason for anything other than the methods that we're using today under this same standard. We can't have it both ways.

Let's monitor 24/7, 100 percent of the time, and as a new twist production will be set each weekday as an ongoing number, because now we're going to monitor 24/7 so the production numbers should also be whatever those production numbers are. I mean they're going to vary from week to week. So just use the real numbers as whatever they're going to be, not 50 percent production, not 80 percent production, not 90 or 95 percent production, 100 percent of the production.

You set a standard to be complied with based on actual exposure and actual production. So if at the end of this time period the standard's 1.5, it's going to be 1.5 whether you produced no coal or whatever your tonnage is for that time period. Dust plans will be kept with a minimum of whatever parameters need to be set to come into compliance so that miners will have something to look at so that they know what to do with their equipment to keep in compliance. They can refer to it with the number of sprays, where the bit pattern is, water pressure, all those things, air et cetera. That way we'll always have something to look at to make sure that the proper parameters are in place.

Greg, I heard you ask how quickly the rule could be implemented. Implement it immediately. And then based on the data that's collected, that's when you put the final rule as far as whatever the exposure limits will be. When asked when the CPDM will be ready, ask NIOSH and Thermo those questions. I'm getting mixed results. I mean I hear, I talked to Craig Yanak, I consider him a friend of mine, he tells me that he bought some units and he's having some problems with it. I believe him.

You know, they tell me they have some problems with some of the older models that they had. I think that there must be some, I don't know, some breakdown to be able to get this fixed, but I also have met with Thermo, with the BCOA members, and Thermo has promised us that they're going to address these problems and take care of these problems. So if they see something coming quickly I would think that if they want to be, you know, in the game in town, they'll take care of those problems, I mean it has to be done. Kind of like the Field of Dreams movie, if you build it they will come.

I know I jumped around a lot on my statements today, but it was kind of based on the comments, I'm sitting back here listening and I'm trying to throw some thoughts together because I already spoke previously at two other hearings and told you specifics on some of those things we support and some of those things we don't support. As a little side statement, I'm not sure why it matters, but my grandpa used to tell me that if an elephant's let into the room on a leash by a handler, chances are that elephant is operating his tricks, performing his tricks on behalf of that handler. A little food for thought. It's safe to assume that the elephant is performing on behalf of the handler so for the record I'm here on behalf of the UMWA.

I have no more thoughts to share with you today. I appreciate your time and your patience, I know it's been a long day. And I thank you for all the work that you do. What we come up with is going to ensure that young miners will be able to live long, healthy lives. I think we have one shot at this to get it right, and I think with you folks, with the folks behind me, and the rest of my friends in labor, we can get the job done. Thank you.

DR. WAGNER: Thank you very much.

MS. OLINGER: I have a question for clarification. You were mentioning take 12, 18 months, whatever it takes to gather true data with the CPDM 24/7, and but use single samples for enforcement while you're collecting those samples. Were you talking about the enforcement using a gravimetric or using that CPDM?

MR. O'DELL: I think that's something that the folks from MSHA is going to have to decide how they determine that compliance based on the operation of the CPDMs, how they're working. We know somewhat what the gravimetrics do today, but, I think I went over this last time, typical day of collecting miners' dust samples isn't reflective of what actually goes on.

You know, they start the unit up in the safety office, it's in a wooden box, they let it run for five minutes, they call you back to the safety supervisor's office, they put it on me, I walk back out into the bathhouse get my cap lights, and we went through this scenario. So I think if, maybe we can use both, you know, side by side to look at whatever that exposure should be, that's a possibility, but I think those details probably need to be worked out by folks smarter than me.

MS. OLINGER: Thank you.

MR. O'DELL: That's why I like going last, because everybody's too tired to ask questions.

DR. WAGNER: Actually it's bookended, I think that the first speaker both referenced what you said concerning data collection for standard setting and you've at the end suggested that this be an approach as well, to implement a full shift, full week standard based on the current standard, just feeding back, making sure that I get it right, that if people are working extended shifts you reduce the amount of dust levels proportionately.

And what I'm having some difficulty figuring out is how long are you going to collecting data and what are you going to be looking for? Is this straight up a feasibility issue trying to figure out what is feasible using the CPDM or are there other issues that you want to do while you're collecting the data?

MR. O'DELL: Here's kind of where we're at. Honestly as a coal miner, Greg, you know that's what I am, as a coal miner I don't know if we have long walls in this country today, and I believe that operators really try to keep dust exposures down, you know, as best they can. Not all, but there are some out there that are truly fighting, you know, to reduce dust. I worked on long wall, you know, I worked 10-hour shifts.

I don't know if a 1-milligram 8-hour standard, so if you look at that and you take that standard and you apply it today, that now becomes I have to be, I think I have to come into compliance with a .8. I don't know if we can do that. It's not saying that as a bad thing, but I think that what we need to do is offer miners the best protection we can but not drive the, I mean we have to, the coal industry already has so many enemies out there that would love to see us go away.

I mean honestly it's true, they'd love to see us just die and disappear and be replaced with these windmills and all this other crap that people talk about, but I don't believe it's possible. I just, I think that we need to protect miners, I think we need to reduce the standard, but I think we need to do it with good science on good data based on what we can see with the PDMs on 10-hour exposure, 12-hour exposure, whatever that is for that time period. Whether it takes 12 months or 18 months, I think there's, unless the industry's changed their mind, and I've run this past industry and they think that's something we can do in a 12 or 18-month period to get to where we need to be.

DR. WAGNER: Okay, so I think, it sounds like I do have a grasp that what you're doing is suggesting some technical feasibility investigation using the CPDM in order to be able to figure out what can and can't be done in terms of optimal dust control. Great. And with that I have no more questions. Did anybody have any more questions for them?

MR. O'DELL: I have a question.

DR. WAGNER: Yeah, please.

MR. O'DELL: Is the parking garage still

open? We need to get our car out of there.

DR. WAGNER: Parking garage is open 24/7, just like the CPDM is open 24/7. Thank you for your participation. Now let me ask, is there anyone who hasn't spoken who would like the opportunity to speak even though you haven't signed up? I see some people standing. Is that because you want to approach the front? If no one else wishes to make a presentation, again I want to thank all of you for participating in this rule making. I want to particularly thank the people who came, gave their presentations, discussed them with the panel, as well as everybody else who participated by your presence.

I want to emphasize that all comments that anybody wants to get into the record must be received or postmarked by May 2nd, 2011. MSHA will take your comments, your concerns into consideration developing the agency's final rule. I'd like to encourage all of you to continue to participate throughout the rule making process. This public hearing is concluded. Thank you.

(Whereupon, at 8:40 p.m., the hearing in the above-entitled matter was concluded.)

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REPORTER'S CERTIFICATE

CASE TITLE: MSHA Respirable Coal Mine Dust

HEARING DATE: February 15, 2011

LOCATION: Washington, D.C.

I hereby certify that the proceedings and evidence are contained fully and accurately on the tapes and notes reported by me at the hearing in the above case before the Department of Labor, Mine Safety and Health Administration.

Date: 2/23/11

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