



Escapeways and Lifelines

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NIOSH

Emergency Response and Rescue Program

GOAL

To enhance the safety and effectiveness
of mine emergency responders

First Responders → Miners

Second Responders → Fire Brigades

Sustained Responders → Mine Rescue Teams

Research Objectives

- Conduct and evaluate smoke evacuation exercises at operating mines
 - Enhance evacuation preparedness
 - Improve confidence level
- Develop/identify and evaluate technology to assist evacuating miners in smoke filled entries
 - Improve chances of a safe evacuation

Smoke Evacuation Exercises

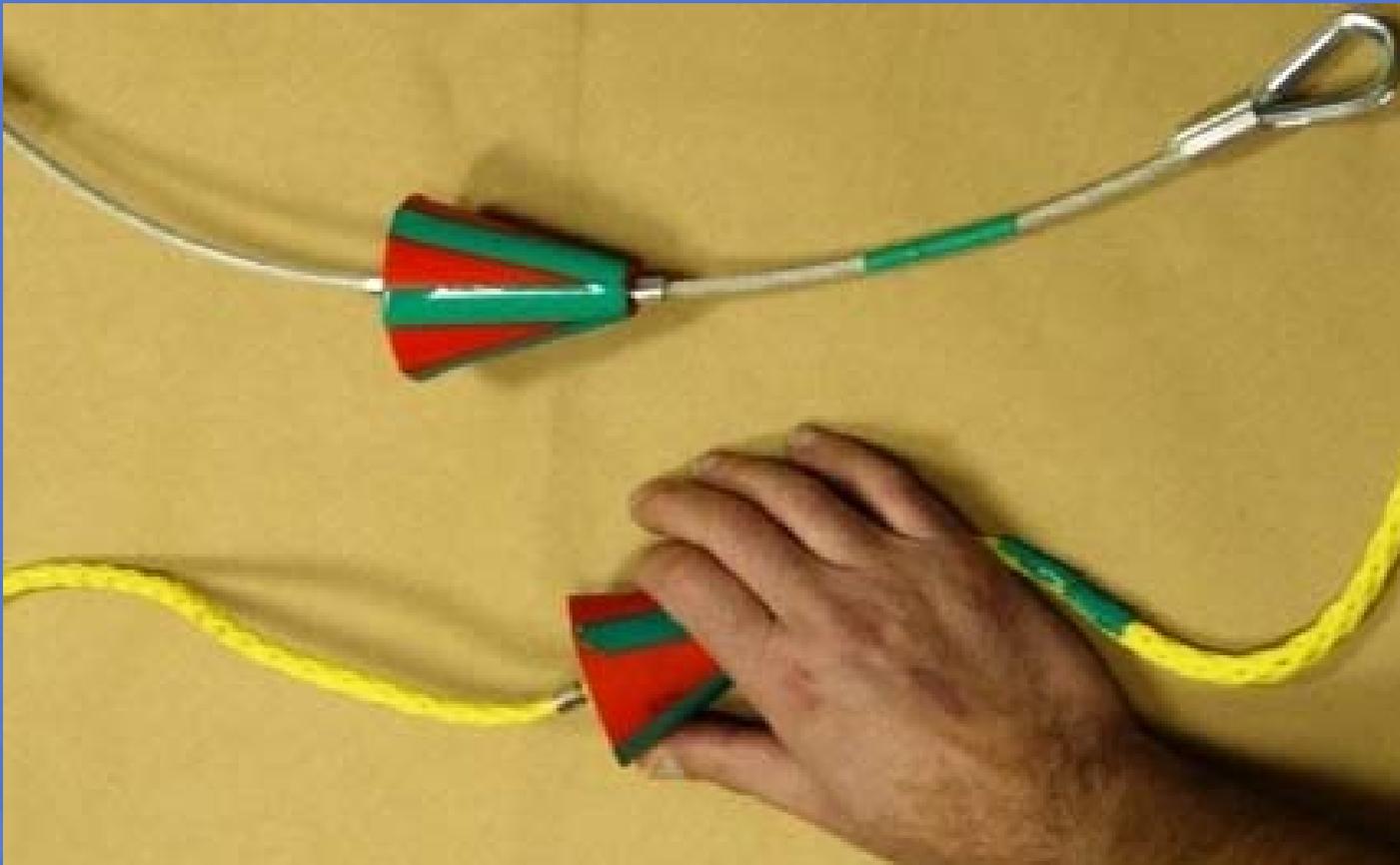


Since 2000, over 1,900 mine workers participated in smoke evacuation exercises at nine mines.

Technology Evaluated

Directional Lifeline

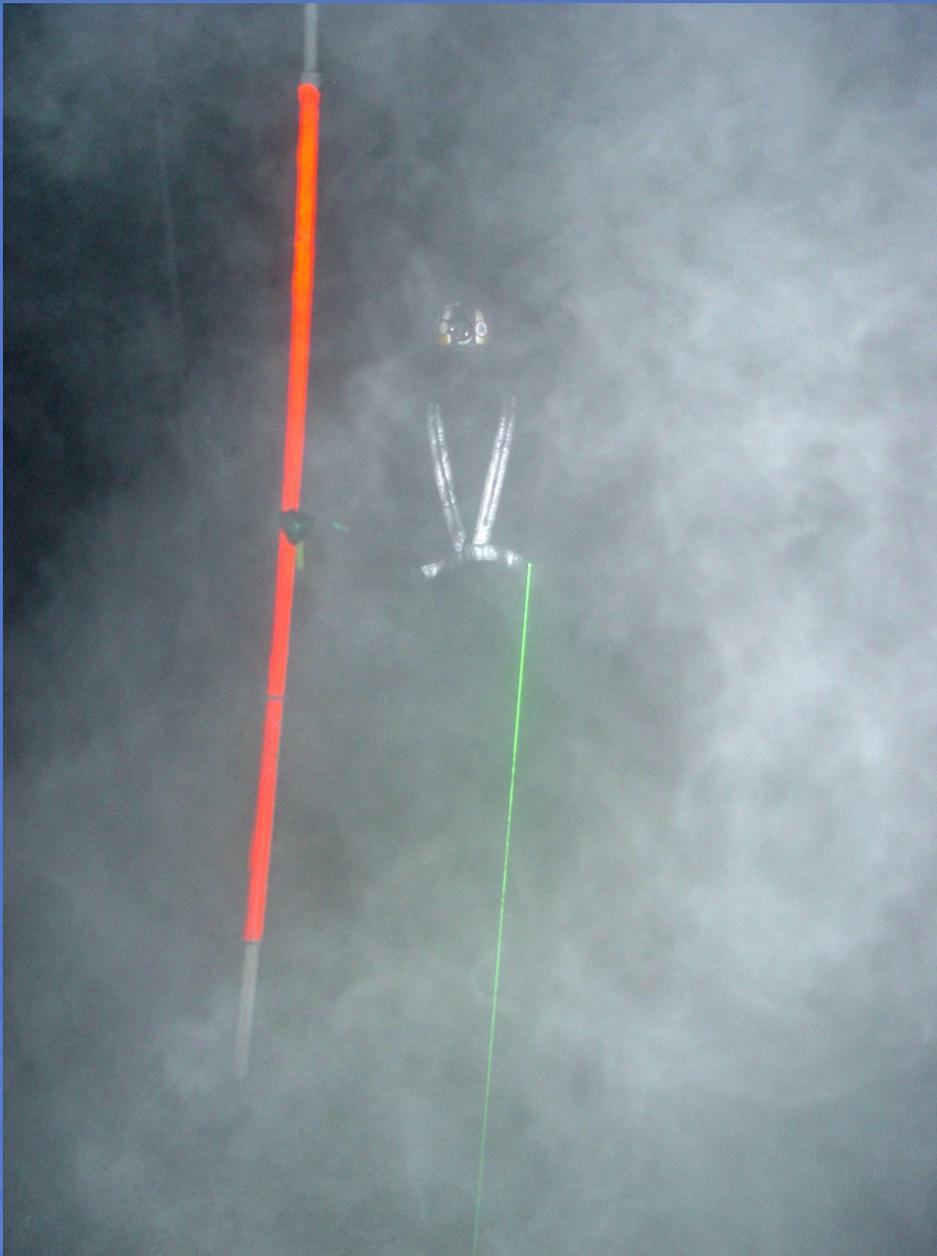
- Flame retardant polypropylene rope
- 900 lb breaking strength
- Plastic directional cones with reflective tape



Technology Evaluated

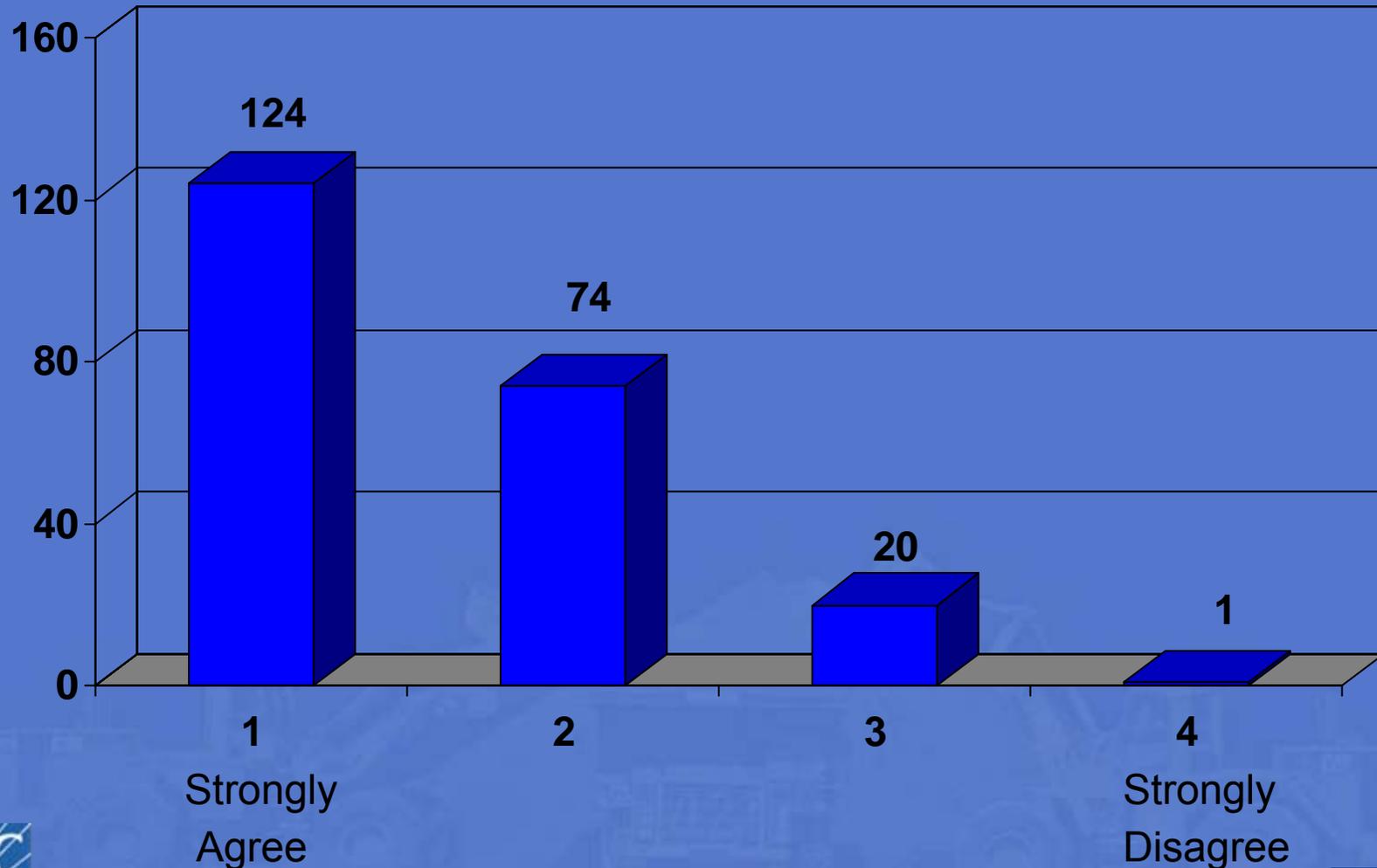
- Reflective materials
- Chemical lightsticks
- Strobe lights
- Handheld lasers



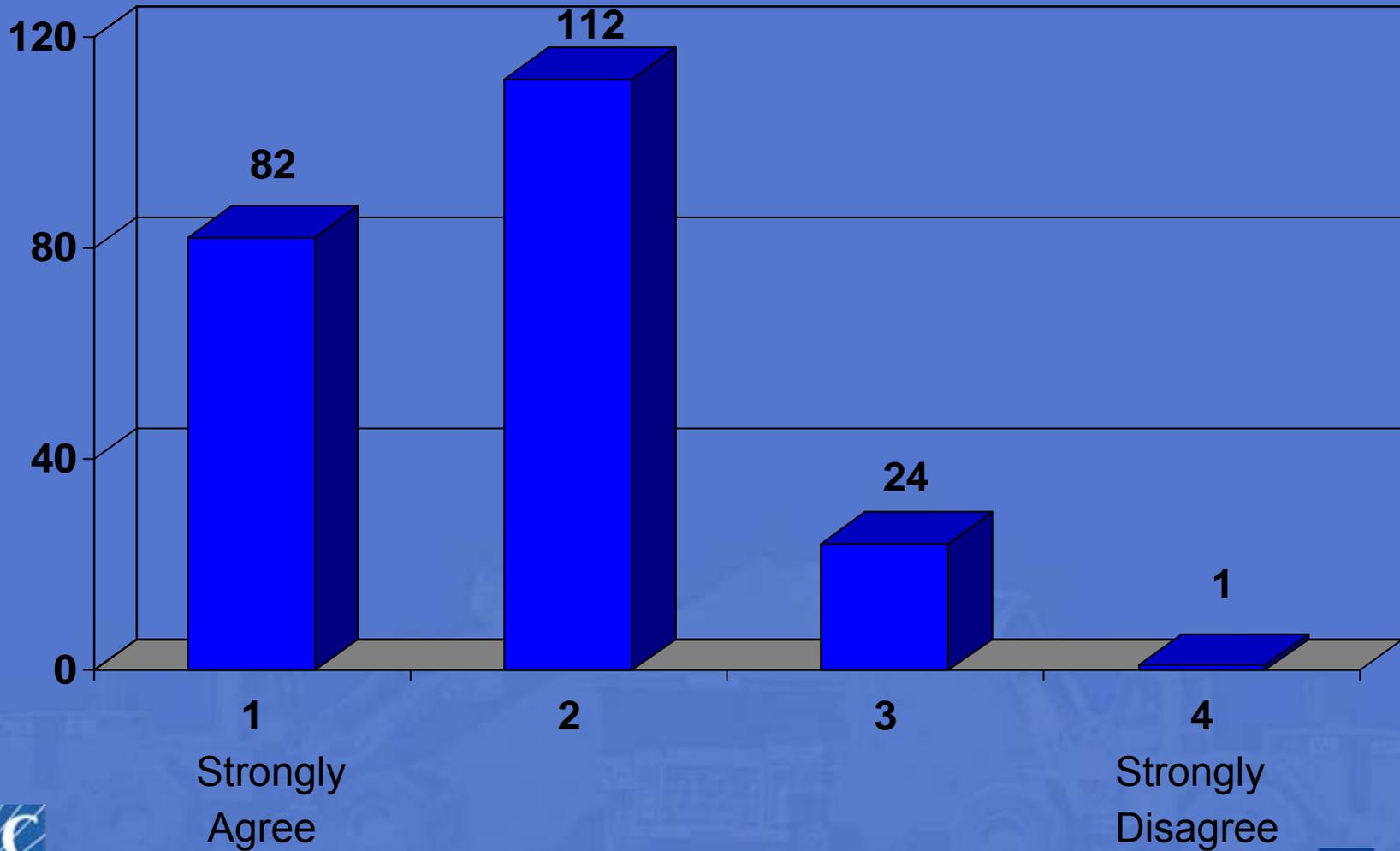


Exiting a smoky entry with the aid of a laser and directional lifeline, wearing a reflective vest.

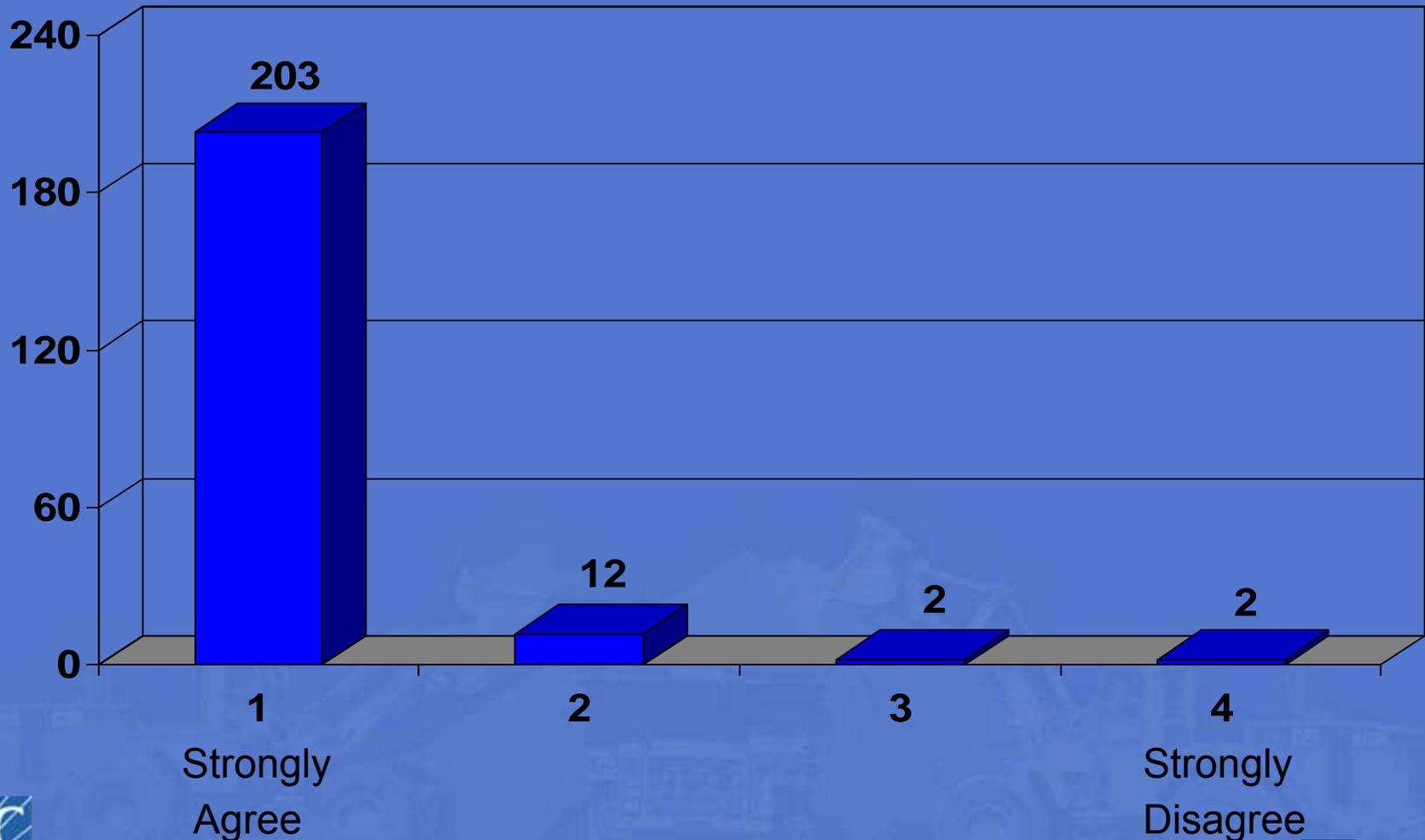
I learned something new from this exercise



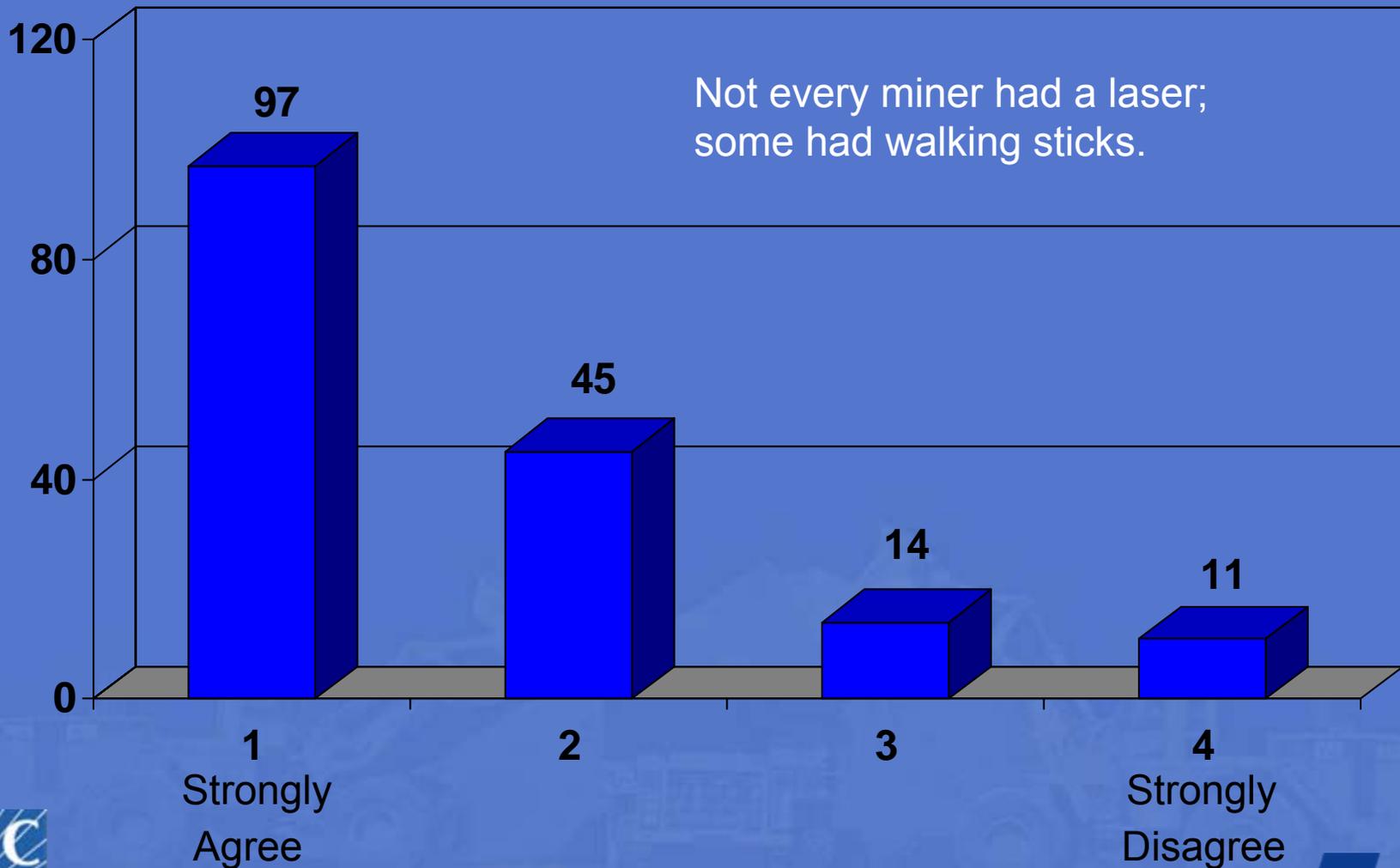
After this exercise, I feel better prepared to travel in smoke



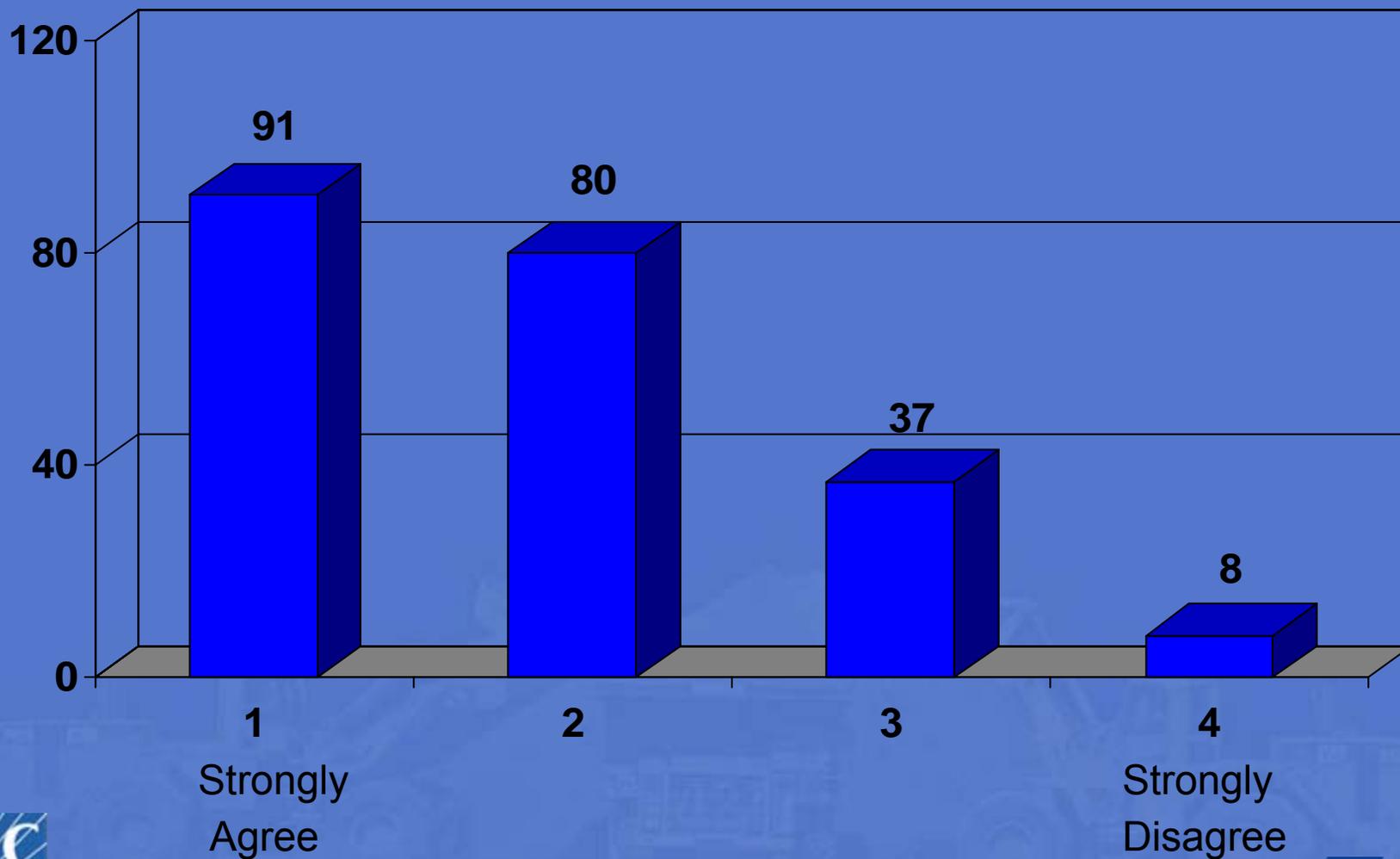
The directional lifeline was useful for escape in smoky entries



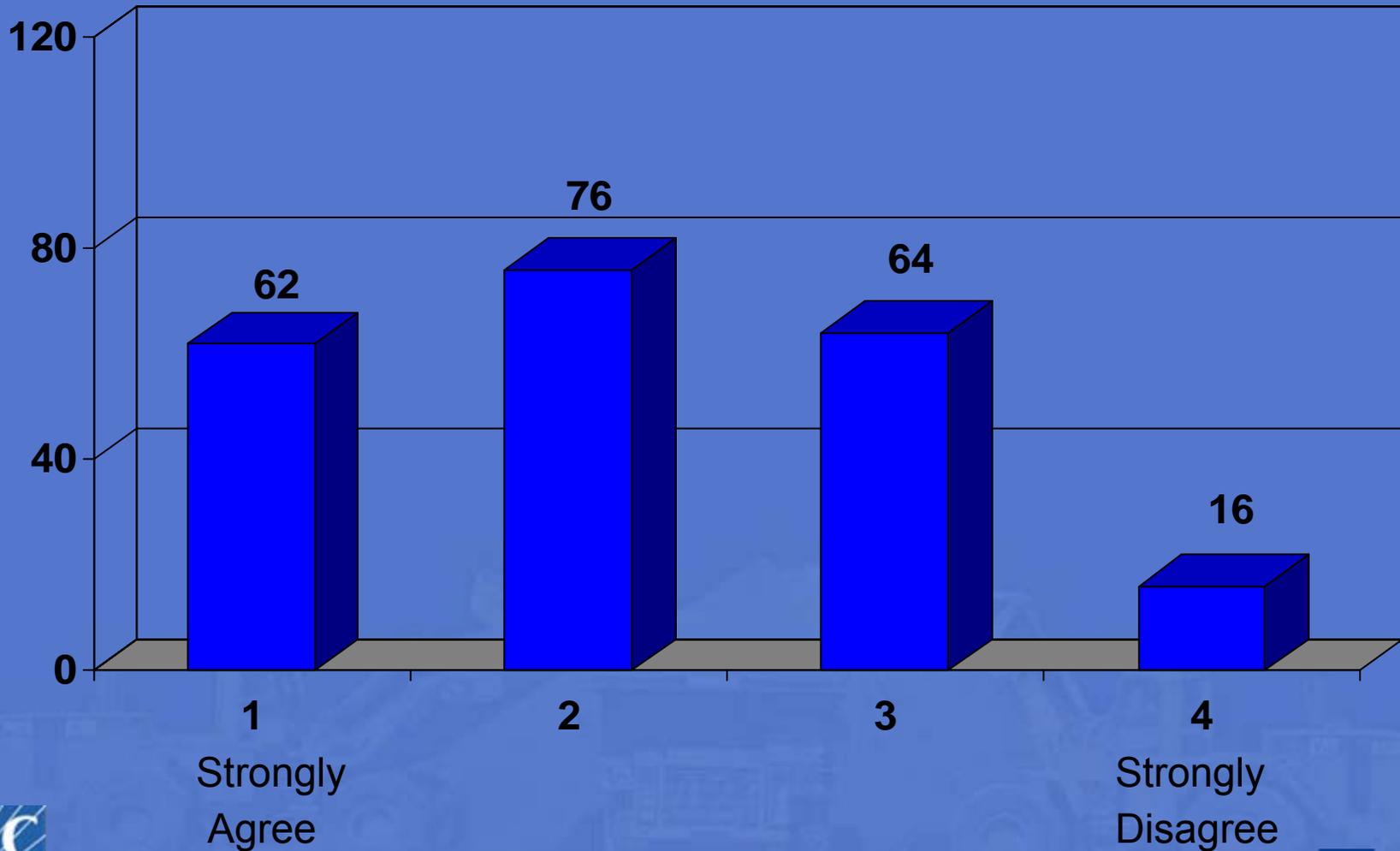
The laser was helpful for escape in smoky entries



The strobe lights are useful for escape in smoky entries



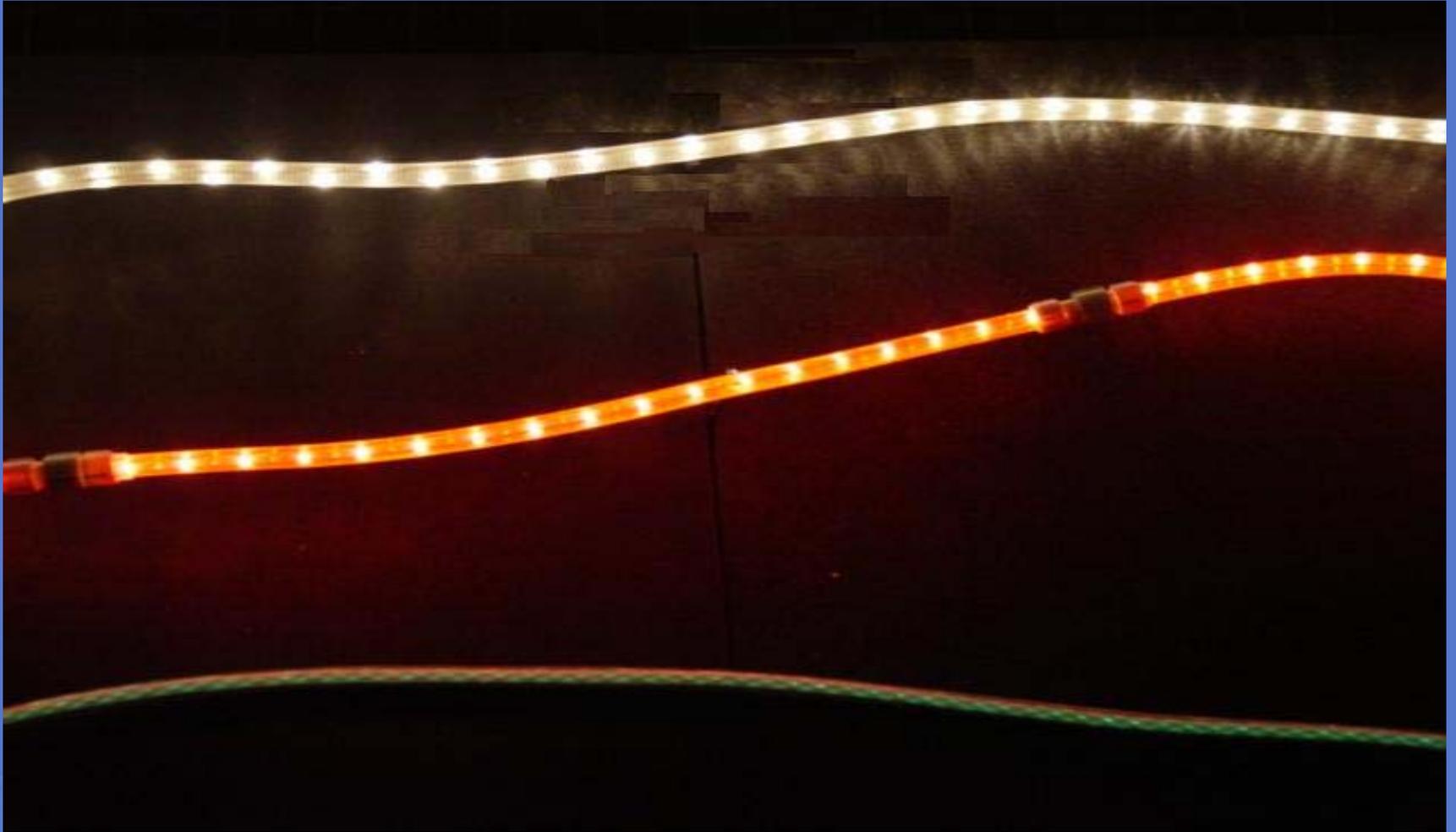
The chemical lightsticks are useful for escape in smoky entries



Comments

- Good exercise on what smoke filled entries would be like.
- Very helpful exercise.
- Green was more visible with all the devices. The escape rope was the most useful.
- The lasers helped the most to find the ribs. I don't think that the lifeline would last long, but it definitely helps a lot.
- Travel time slows considerably in smoke. A good fact to consider when deciding where to space SCSR's.
- Place strobes on the escape rope for better effectiveness in actual situations.

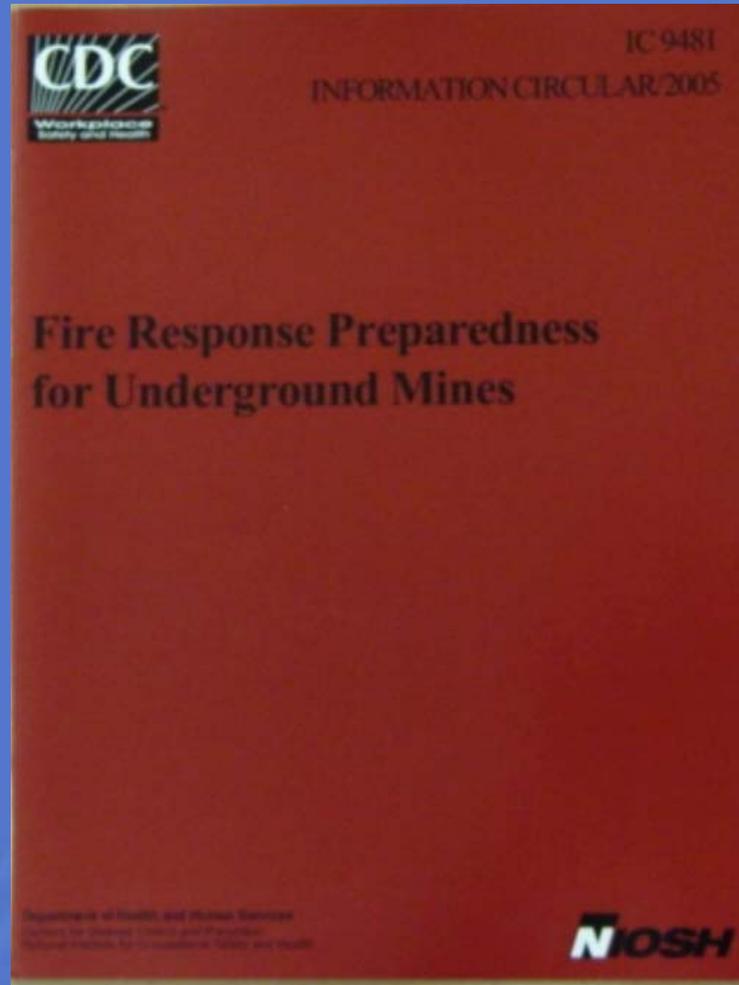
Lighted Lifelines



CONCLUSIONS

- Underground smoke evacuation exercises better prepare miners for escape through smoke contaminated entries.
- Directional lifelines were selected by miners as the optimum escapeway aid.
- Laser pointers and strobe lights were also found to be beneficial.

More Information....



<http://www.cdc.gov/niosh/mining/pubs/pdfs/2006-105.pdf>