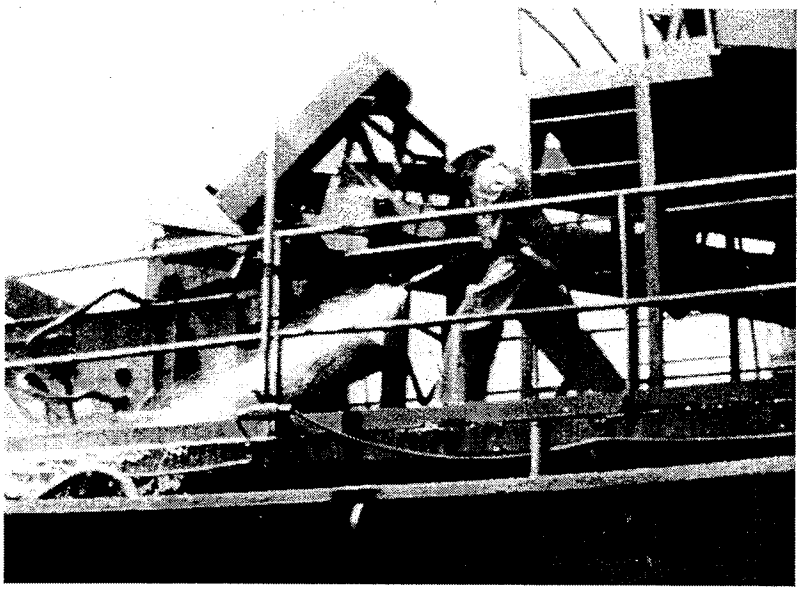
MODULE NUMBER 2
OF
INSTRUCTION GUIDE NUMBER 40

ON-THE-JOB TRAINING
FOR THE
SAND, GRAVEL, AND CRUSHED STONE INDUSTRY

PLANT CLEAN-UP



For the job of plant clean-up, this module describes the basic job steps, potential accidents and hazards, and recommended safe job procedures.

A tremendous quantity of material passes through a typical plant every day. Obviously, an objective is to deliver all the material to its final destination. However, because of the characteristics of the material - variable nature, extremely abrasive, often coated with cohesive material - some spillage will occur, which may necessitate frequent clean-up activities.

Belt conveyors are a major source of spillage. Spillage usually can be found at return idlers, tail pulleys, take-up pulleys, and transfer points. Chutes and skirt boards, that are used at transfer points, are subject to corrosion and wear from wet and abrasive materials. Holes will eventually form in chutes and skirt boards, resulting in spillage at transfer points.

A considerable amount of fine material is present in unwashed material coming from the feeder hopper to the main feeder belt. This unwashed material is usually coated with clay, and tends to stick to the belt. Return idlers, tail pulleys, and take-up pulleys pick up this clay covered material, and sling it onto surrounding surfaces. Chute boxes (skirt boards) may not catch all of the material, thereby allowing it to accumulate at the tail pulley. Belts, other than the main feeder belt, are subject to smaller amounts of spillage and accumulated fine material.

Spillage can also occur around scrubbers, crushers, shaker decks, classifier stations, and final rinse screening stations. Spillage in these areas can be caused by worn chutes, excessively wet material, or excessively high material feed rate. Material can bounce or roll off shaker screens, especially when the screens become clogged with flat rocks or clay. Loose or broken connections at classifier dumping stations, just above splitting troughs, can cause considerable amounts of spillage.

Spillage around the plant area must be cleaned up, because it may create hazardous situations, as well as economic loss. Accumulated material on walkways can be a tripping hazard, and, if permitted to build up to the top of toeboards, could even allow a person to slide under the intermediate rail, and fall to the ground. Loose materials may also fall over the toeboards and strike persons passing underneath. Wet spillage, which cakes on walkways, accelerates the corrosion process, which can eventually weaken the structure to the point that it could fall under a person's weight. Economic advantages of clean-up include reduction in rust, better operation of the plant, more efficient work by employees, and fewer accidents from spillage problems.

Spillage can be minimized if worn chutes, skirt boards, and other causes of spillage are reported and corrected. Mechanical belt cleaners reduce the clean-up job around conveyor systems. In general, hazards will be reduced, and money can be saved, if spillage can be minimized.

Typically, plant clean-up is done by utility workers, laborers, or conveyor belt crews. Where possible, clean-up activities should be scheduled to take place when the plant is shut down, in order to minimize hazards to employees working near moving equipment.

Clean-up workers use high pressure water hoses, shovels, and small front-end loaders. Injuries to clean-up workers include muscle strains (the most common), back injuries, and eye injuries (from water hoses).

The following safe job procedures will help to minimize incidents that may cause injuries, and that may adversely affect production.

REQUIRED OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT:
HARD HAT, STEEL-TOED BOOTS (RUBBER BOOTS RECOMMENDED), SAFETY GLASSES OR GOGGLES, RUBBER GLOVES RECOMMENDED, SLICKER SUIT

SEQUENCE OF BASIC JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED SAFE JOB PROCEDURES
1. Clean plant walkways with high pressure hose.	1. A) Eye injuries.	1. A) Wear safety glasses or goggles.
	B) Struck by whipping water hose.	B) Prevent hose from whipping by: 1. Securing your grip. 2. Using a helper. 3. Standing on hose near nozzle. 4. Turning water on slowly to a pressure with which you are able to walk.
	C) Electrocution.	C) Don't aim water hose directly at electrical or junction boxes.
	D) Bruises (struck by water) from water nozzle.	D) Don't aim water hose at others. Watch for people at other levels of the plant.
	E) Knocked into something.	E) Don't stand with your back toward open walkways, stairways, etc.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED SAFE JOB PROCEDURES
	F) Slips and falls.	F) Don't climb or descend stairs while handling water hose under pressure. Stand with feet apart, one foot behind the other, and lean forward to brace yourself against pressure of hose. Where possible, brace yourself securely against a stationary object. Start from highest work area and work down, washing platforms, walkways, and other places where there is an accumulation of material. Remove water hose from the walkway after you finish, to eliminate a tripping hazard.
2. Clean-up around tail pulleys and transfer points, tunnels, and other areas, as required, with a shovel.	2. A) Getting caught in head or tail pulley.	2. A) Use long-handled shovel in all areas, except where restricted clearance is a problem. This reduces the possibility of coming in contact with moving parts. Do not clean in guarded areas with the belt running. If you must clean-up in guarded areas, use proper lockout/tagout procedures.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED SAFE JOB PROCEDURES
	B) Getting shovel caught in idlers.	B) When shoveling onto a moving conveyor, always shovel in the direction the belt is traveling. The shovel will be carried away from you, if it becomes hung in the belt.
	C) Striking coworkers.	C) Watch out for others working in the area.
	D) Back injuries.	D) Load the shovel moderately. Move your feet when turning, rather than twisting your body. Lift with your legs, not your back.
	E) Caught between moving radial stacker and stationary object.	E) When working near the tail pulley of a radial stacker, do not get between the tail pulley and a stationary object.
3. Cleaning up ground area and plant with a small loader (bobcat, etc.)	3. A) Overturning loader.	A) During clean-up, operate the loader at less than half throttle, with the clutch in low speed. Do not operate the loader in a manner that causes any of the wheels to leave the ground. Do not overload the bucket. Carry the bucket in a low position when transporting materials. Always fasten the seat belt.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL ACCIDENTS OR HAZARDS	RECOMMENDED SAFE JOB PROCEDURES
	B) Damaging equipment, or plant structure.	B) Avoid bumping any equipment, or plant structures. Always check before changing direction. Look in the direction of travel. When parked, lower bucket, set parking brake, and chock wheels.
	C) Striking other people.	C) Always check before changing direction. Look in the direction of travel.