

INDUSTRIAL BUILDINGS AND PLANT LAYOUT

tions for disposal of radioactive wastes

Many wastes can be burned or disposed of on dumps. However, precautions are necessary with certain wastes. Combustible materials, such as wood, scraps, and paper, can be burned in an incinerator. A trench can be used for burning oils, oil should be ignited from a safe distance with a fuse. Chemical wastes should be rendered harmless before being dumped, strong acids, for example, should be neutralized. Poisonous materials, magnesium chips, explosives, and similar substances require special procedures for safe disposal.

Smoke from power plants and other sources and inert dusts from various types of plants may be nuisances or even sources of danger to the public. Provision for complying with smoke control ordinances should be made before construction is begun.

Toxic smoke, fumes, or dusts are a serious problem in some industries. Tall stacks often are used to diffuse gases in the atmosphere. The effectiveness of this method depends on the nature and volume of the gases, the location of the plant, prevailing wind direction, and atmospheric conditions. Rain may absorb harmful gases and cause heavy damage to crops. A combination of prolonged fog or other unfavorable atmospheric conditions and a contaminant in a valley has resulted in serious injuries to animals and people. Such conditions causing poor diffusion occasionally have temporarily shut down plants with high stacks.

The possibility of recovering usable or marketable materials from wastes should always be investigated. Dusts and fumes often are recovered by filters, cyclones, electronic precipitators, or similar equipment. Useful gases and vapors may often be economically recovered by means of spray towers or other recovery equipment.

Smoke from heating units may be eliminated entirely by electrically driven heat pumps, or reduced by gas-engine driven units. When buildings have a relatively high heat load, are in not too severe climates, and when favorable electrical or gas rates can be obtained, the heat pump may be considered. A mechanical engineer should be consulted.

Use of waterways

Profitable salvage may be obtained by treating liquid and solid wastes which fre-

quently cause problems when dumped into streams and lakes.

Public opposition to contamination by industrial wastes is growing and more stringent regulations are being adopted. Some wastes are objectionable because of offensive odors, resultant water pollution, and deleterious effect on animal and vegetable life.

When considering disposal of wastes in a waterway, a study of the kind and amount of contaminant and of the use of the waterway for drinking water, recreation, and other purposes may be necessary. Even disposal in the ground must first be studied so as not to pollute nearby wells.

In some cases, liquid wastes can be diluted, neutralized, filtered, settled, or otherwise chemically treated before the clear liquid is placed in a stream.

Trestles

If employees are required to perform duties on trestles, a footwalk 5 ft, 1 in wide, measured from the nearest rail, should be provided on at least one side. The footwalk should have a railing 42 in high and, on the exposed side, toe boards 6 in high.

If employees travel on both sides of the track, crosswalks should be provided at convenient locations.

Metal gratings or screens installed over walkways or passages under trestles furnish protection from falling materials.

Openings for conveyors or hoppers require gratings or a grizzly with bars spaced not more than 12 in apart, to prevent employees from falling into the openings.

Bins

Many employees who have entered bins to loosen materials have been carried down by slides and suffocated. This danger often can be entirely eliminated if the bottom of the bin is designed so that the slope exceeds the angle of repose of the material. Also, a heavy grating or screen, on which an employee can work without danger, can be installed above the bottom. The openings in the grating should be big enough to permit the material to pass through readily and to push a pole through.

Stairs provide the safest means of access to bins, tanks, and similar structures. If fixed ladders are installed, they should con-