WATER BUREAU GUIDANCE

Scrap Metal Bins and Roll Off Boxes

Many companies managing scrap metal bins and roll off boxes in Michigan request information from the Department of Environmental Quality regarding controls that can help prevent storm water pollution. Staff have observed companies successfully managing the oil and metal wastes in various ways, including a combination of the following practices.

Structural Controls

Structural controls are physical features that control and prevent storm water pollution, which range from preventive measures to treatment systems. While these controls are sector-specific, the effectiveness of these controls is directly related to successful implementation of nonstructural and preventative controls, some of which are identified in the next sections.

Covering is partial or total enclosure of the scrap metal dumpster or of the entire material storage area to eliminate exposure to rain and/or runoff. This prevents the contamination of storm water and stops the generation of additional wastewater from storm water combining with the cutting oils in the dumpster.

Temporary covering methods include tarps and plastic sheeting. Considerations:

- Can become torn or ripped, or removed by wind
- Require frequent inspections; inspecting coverings must be part of an overall preventive maintenance program. Maintenance involves frequent inspection of the covering for rips, holes, general wear, and removal by wind.
- Evaluate durability and compatibility with material or activity being covered.

Permanent coverings can include an appropriate structure with a permanent roof. Considerations include:

- A permanent structure may allow the facility to avoid the need for a National Pollutant Discharge Elimination System permit for storm water discharges associated with industrial activity (Industrial Storm Water Permit) if it covers all of the site's exposure.
- Health or safety problems may develop with enclosure built over certain materials or activities.
- A structure with only a roof may not keep out all precipitation.
- Costs may prohibit the building of complex structures.
- Design considerations should minimally address ventilation and temperature needs, vehicle and materials access, handling, and transfer.
- The structure may need internal drainage if it is not effective in keeping all water out.

Floor drainage within an enclosure should be properly designed and connected to a sanitary sewer, if appropriate. The local publicly owned treatment works has authority to approve or deny the connection based on any pretreatment requirements, restrictions, or compatibility problems. If a connection to a sanitary sewer is unsuitable, then internal drains would need to be connected to some suitable containment area for later pretreatment and disposal.

Containment structures such as tanks, sumps and large secondary containment pans and containment berms are sometimes used for collection of cutting oils that drain from scrap metal dumpsters. The facility then has this wastewater pumped and hauled, but could also investigate treatment practices that could reduce the amount of wastewater that needs to be disposed. Considerations include:

- Containment Berms are generally portable, temporary and foldable and may have "built-in" filtering devices.
- Containment Berms often offer a cost-effective means of secondary containment and filtration as they are easily positioned around or under roll-off containers.
- Hydrocarbon/Metal Filtering Devices can be fitted to the containment structures to turn the containment structure into a filtering system.

Dikes and diversions or placement of the waste material handling area could assist in keeping non-exposed storm water from reaching areas that contain industrial materials, therefore producing less wastewater to manage.

"Leak Proof" roll-off bins may be used in combination with liners. Considerations include:

- Require frequent inspections for leaking and holes. Sometimes the bins are under control of the hauler and facilities do not get their own scrap bin back. May have to purchase own bins or assure "leak-proof" in contract with hauler.
- When storm water enters the dumpster, it generates an additional wastewater for disposal. Increased cost may result if hauling and disposal are determined by weight.
- Transportation practices often involve hydraulic lifting to an angle that can cause spillage of the storm water/oil wastewater onto the pavement.
- Easy to implement.

Oil absorbent beads and sorbents can be used with secondary containment. Considerations include:

- Beads are expensive. Best for oils with PCB's.
- Sorbents are inexpensive. Oil specific sorbents can be used to filter and absorb virtually all forms of hydrocarbons.

Oil/Water Separators and hydrodynamic separators are widely used for storm water treatment. Hydrodynamic separators are flow-through structures with a settling or separation unit to remove sediments and other pollutants. No outside power source is required, because the energy of the flowing water allows the sediments to efficiently separate. Depending on the type of unit, this separation may be by means of swirl action or indirect filtration. Considerations include:

- Most effective where the materials to be removed from runoff are heavy particulates - which can be settled, or floatables, which can be captured, rather than solids with poor ability to settle or dissolved pollutants (e.g. water soluble cutting oils).
- Available in wide size range and some can fit in conventional manholes.
- Maybe especially useful for "hotspots" such as waste storage and handling areas.
- Visual inspections and adequate maintenance are integral to effectiveness. Maintenance is not intensive because there are no moving parts, and the frequency of required sump cleaning is site specific (i.e. the more sources of particulates in the watershed will yield more buildup of sediment for disposal).

Hydrocarbon/Metal Filtering Devices are placed before or after the drain opening of a roll-off bin. These filters can capture hydrocarbons, metals and sediments in one filter housing. The filter devices can be sized to meet specific needs or applications. Hydrocarbon/Metal Filtering Devices are gravity fed, flow-through structures. Metal filings, sediments and oils are removed from the stormwater as it passes through this filtering device. Stormwater flows through the filtering media and is cleaned without use of external power. Considerations include:

- The filter media must be matched to the pollutant.
- Should be portable and easy to connect to the drains of the roll off bins.
- Some Hydrocarbon/Metal Filtering Devices are small enough to fit onto or into the back of the roll-off bin. Others are installed next to the roll-off bin and are connected with a drain hose/pipe. This configuration allows the stormwater to flow out of the roll-off bin and is filtered as it continues through the filtering media.
- Regular maintenance is very important.

Catch Basin Filtering Devices are an effective means to filter stormwater. They are held in place by the metal grate that covers a catch basin and removes metal filings, oils/hydrocarbons and sediment as they flow into the basin. Catch Basin Filters can be used in a catch basin that is adjacent to the roll-off bin and act as a primary or secondary means of capturing pollutants that flow out of the roll-off bin. Considerations include:

- Selective filter media may be inserted; it must match the specifications of the pollutants at the site.
- Regular maintenance is especially important because the discharge from the device is not usually visible. They can be fitted with maintenance alarms.

While structural controls prevent and control storm water pollution, the Industrial Storm Water Permit requires their use when nonstructural controls are inadequate in preventing contamination of storm water. So, structural controls such as oil and water separators can not be the primary treatment devices under the Industrial Storm Water Permit.

Nonstructural Controls

Nonstructural controls are practices that are relatively simple, fairly inexpensive, and applicable to a wide variety of industries or activities. These are typically everyday types of activities undertaken by employees at the facility. The following can be considered to help prevent storm water pollution from scrap metal boxes and roll off bin storage areas.

Industrial cleaning equipment such as compact scrubbers can be used around scrap metal dumpsters to pick up spilled oil and metal chips, grindings or other industrial waste.

Inventory control can be an effective best management practice. If a facility has scrap metal dumpsters that are overfull, the easiest best management practice may be to get larger dumpsters, or have a more frequent pick-up schedule from the hauler.

Employee training is useful to discourage the dumping of oils down a storm sewer. The state of Michigan offers a free training for Certified Storm Water Operators. It is recommended that facilities train a team of people that are involved in storm water management and housekeeping at the facility. Certified Storm Water operators will be likely to recognize potential impacts from practices conducted outside at the facility, which can result in both pollution prevention and permit compliance. General employee training can be supplemented with stenciling or even engraved storm sewer caps. Many municipalities are including the message "drains into river (or lake)" on their storm sewer caps. Caps made with this imprinted message are available from manufacturers at the same price as the standard cap. Considerations include:

- Stenciling can be washed off over time, whereas sewer caps that have the message imprinted are permanent.
- Employee training should discuss where the storm sewers ultimately flow, thereby helping establish the connection between the facility's activities and impacts to the receiving lake or river.

Visual inspections and examinations provide a simple and inexpensive means of obtaining a rough assessment of the effectiveness of a facility's storm water management practices. Considerations include:

- If the people who work around the scrap bins are Storm Water Certified Operators, then they will notice when non-structural controls (such as sweeping or generally cleaning the area) would be most effective.
- Complete inspections under good lighting conditions.
- Conduct visual inspection of runoff within the first 30 minutes of discharge, if possible.
- Examine discharges for odor, color, clarity, floating solids, settled solids, suspended solids, foam, oil sheen and other obvious indicators of storm water pollution.
- Record the following in the inspection logs at intervals that are appropriate for the facility management area, accounting for the more frequent inspections where needed per BMP (i.e. temporary coverings combined with the use of industrial cleaning equipment around the bin probably require more frequent inspections than permanently covered areas):
    - Examination date and time;
    - Examination personnel;
    - Nature of discharge (i.e. runoff or snowmelt);
    - Visual quality of the discharge;
    - Probable sources.

Pollution Prevention Practices and Programs

Process changes can be considered to reduce the amount of chips generated or oils that end up in the hoppers before being emptied into the roll off boxes.

Reuse oils by circulating them back into the system. For more information refer to the Shane Steel Case Study, developed by Shane Steel in cooperation with the Retired Engineer Technical Assistance Program.

A primary problem in metal working fluid management is contamination with tramp oil and the problems that result from this. While the best solution for tramp oil problems is to prevent the oils from entering the metal working fluid, some contamination will occur as the machines and their oil seals and wipers wear. This can be reduced through preventative maintenance such as periodic seal and wiper replacement. Depending upon site specific conditions, optional metal working fluid performance may be enhanced with the following source reduction options:

- Use high quality, stable metalworking (grinding and cutting) fluids that are most suitable for the particular application.
- Use demineralized water for mixing purposes.
- Control the fluid concentrations and chemistry (pH, dissolved oxygen, etc.) and consider adding biocides to extend the fluid life, by combating microbe growth.
- Periodically clean the sump and machine.
- Inspect and maintain the gasket, wiper and seals to minimize tramp oil contamination.
- Clean the metalworking fluid through filtering (bag, cartridge or disc filters) and clarification, chip wringers, or centrifugation, to minimize microbe growth by controlling tramp oil buildup.
- Assign fluid control responsibility to one person.

Consider working with a pollution prevention engineer to evaluate whether any of these options would be useful at your facility.

In addition to the above, evaluate the feasibility of these recycling options for metalworking fluid:

- ❑ Filtration of metalworking fluids
- ❑ Skimming
- ❑ Coalescing
- ❑ Hydrocycloning
- ❑ Centrifuging
- ❑ Pasteurization
- ❑ Downgrading

Department of Environmental Quality Pollution Prevention Programs

Retired Engineer Technical Assistance Program provides free and confidential pollution prevention and energy efficiency assessment from retired engineers and scientists. Qualifying businesses must have 500 or fewer employees.

Small Business Pollution Prevention Loan Program: Up to $300,000 are available for pollution prevention projects at 5% or less interest for businesses with fewer than 500 employees.

Michigan Business Pollution Prevention Partnership encourages businesses to apply creative, cost-effective techniques to reduce waste and prevent the release of hazardous substances.

Clean Corporate Citizen provides public recognition and regulatory flexibility to facilities that demonstrate strong environmental performance.

Environmental Management System (EMS) assistance is available to help facilities develop an EMS leading toward ISO 14001 Certification or Clean Corporate Citizen designation.

Michigan Manufacturers' Guide to Environmental, Health, and Safety Regulations is a publication that steers the reader through the maze of state and federal environmental, health and safety regulatory programs.

More Information

- For **surface water discharge questions** contact the Water Bureau (WB) District Office for your area. Surface water (NPDES) regulations, application forms, publications and staff listings can be accessed from the Internet at www.michigan.gov/deqwater
- For **groundwater discharge questions** contact either the WB District Office for your area or the WB Groundwater Discharge Program at (517) 241-2151. Groundwater discharge regulations, forms and other information can be accessed online.
- If you are unsure who to contact in MDEQ, call the Environmental Science and Services Division at 800-662-9278 or Email at deq-ead-env-assist@state.mi.us.
- For discharges to publicly owned treatment works contact the local facility operator.

This document was produced jointly by DEQ's Water Bureau and Environmental Science & Services Division.