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Storm Water Management Fact Sheet
Coverings

DESCRIPTION

Covering is the partial or total enclosure of raw materials, byproducts, finished products, containers, equipment, process operations, and material storage areas that, when exposed to rain and/or runoff, could contaminate storm water. Tarpaulins, plastic sheeting, roofs, buildings, and other enclosures are examples of temporary or permanent coverings that are effective in preventing storm water contamination. The most prominent advantage of covering is that it is inexpensive in comparison to other BMPs.

APPLICABILITY

A review of numerous NPDES group applications indicates that covering is a commonly implemented BMP. As more facilities identify potential sources of storm water contamination, the use of coverings will increase significantly due to their effectiveness from a performance and cost perspective.

Covering is appropriate for loading/unloading areas, raw material, byproduct, and final product outdoor storage areas, fueling and vehicle maintenance areas, and other high risk areas.

ADVANTAGES AND DISADVANTAGES

Covering is a simple and effective storm water management BMP. Its advantages relative to other storm water management BMPs include its comparative ease of implementation, its potential low cost, and its widespread applicability.

Disadvantages associated with covering as a BMP include:

- Temporary covering methods, such as plastic sheeting, can become torn or ripped, exposing the contaminant to precipitation and/or storm water runoff.
- Costs may prohibit the building of complete enclosures.
- Health or safety problems may develop with enclosures built over certain materials or activities.
- Coverings require frequent inspection.
- A structure with only a roof may not keep out all precipitation.

The impact from a covered area depends on the degree of complexity in the covering design. Simple plastic sheeting can possibly create a storm water diversion, and allow for disposal of uncontaminated water to a storm sewer. An appropriate structure with a permanent roof may be less effective, if the material inside is not sufficiently protected from contact with runoff. An enclosed structure may need to have internal drainage. However, if the stored material is considered hazardous, it must not be connected to the storm sewer. Depending on the site's NPDES permit, connection to a sanitary sewer may also be unsuitable. The internal drains would then need to be connected to some suitable containment area for later pretreatment and disposal.

IMPLEMENTATION

When implementing a program to cover materials to reduce their exposure to runoff, one must first

choose the proper covering. When deciding on a covering, it is necessary to evaluate the integrity and durability of the covering, as well as its compatibility with the material or activity being covered.

Covering alone may not protect exposed materials from storm water contact. Placing material on an elevated impermeable surface or building curbing around the outside of the materials may be required to prevent contact with storm water runoff from adjacent areas. If the program calls for a material to be enclosed, the designer should consider materials access, handling, and transfer during the design of the enclosure. Materials that pose environmental and/or safety dangers because they are radioactive, pathogenic, flammable, explosive, or reactive, require special ventilation and temperature design considerations.

In addition to properly designing an enclosure or cover, practicing proper materials management within an enclosure or underneath a covered area is essential. For example, floor drainage within an enclosure should be properly designed and connected to a sanitary sewer. The local publicly owned treatment works should be consulted to determine if there are any pretreatment requirements, restrictions, or compatibility problems prior to discharge of the storm water.

Based on data currently available, it is difficult to quantify the mitigation of runoff contamination when covering is used. However, significant runoff water quality benefits are expected by simply reducing the contact between potential contaminants and precipitation or storm water runoff. One source has estimated that 80 percent of the environmental damage from de-icing chemicals is caused by inadequate storage facilities.

Inspecting coverings must be part of an overall preventive maintenance program. Maintenance involves frequent inspection of the covering for rips, holes, and general wear.

COSTS

Covering costs vary in proportion to the degree of protection desired, and the required life span. The most inexpensive covering is plastic sheeting, but it is not suitable where a high degree of protection is desired for a long period. An enclosed building is the most expensive type of covering when materials for the structure, lighting, and ventilation are considered, but it offers the highest degree of protection for the longest period.

REFERENCES

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3. Washington State Department of Ecology, 1992. *Storm Water Management Manual for Puget Sound.*

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