How Concrete Producers Can Protect Michigan's Great Lakes, Rivers, and Streams

Written by the MDOT Storm Water Management Team and its consultant, Tetra Tech

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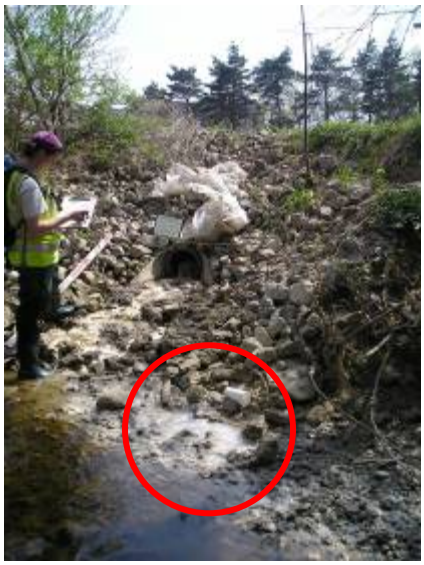
Ready mix concrete producers are in a unique position to help protect Michigan's valuable water resources. Why? Because you provide the most widely used construction material on earth and are responsible for the proper disposal of wastewaters and leftover material. Your role is so important that federal and state laws require you to have a current storm water permit to operate.

But why a storm water permit? What is the connection between concrete production and storm water pollution? During production, materials that are blown or washed into a street, gutter or storm drain can be picked up by rain water and carried directly into lakes, rivers and streams. Unlike sanitary sewer flows, storm drain flows receive no filtration or treatment before being discharged.

Potential storm water pollutants include cement, sand, aggregates, chemical admixtures, fuels and lubricants. Waste concrete washout is highly alkaline and toxic to fish and other aquatic organisms. It also contains sediment that coats the stream bed and destroys habitat. These pollutants harm local waters when allowed to flow into storm drains. Sometimes, pollutants are intentionally released into storm drains (hosing down a spill or pouring wash water directly into a storm drain.) More often, pollutants reach storm drains indirectly due to improper pollution prevention measures.



Polluted Storm Water Runoff – Note White Concrete Wash Water Entering Stream

A list of pollution prevention solutions is presented below. Some of these may not be practical for all concrete batch plants. There are many other pollution prevention opportunities than those identified below. As owners and operators, you have the expertise to identify those opportunities best suited to your operations.

How to Prevent Storm Water Pollution and Protect our Lakes, Rivers and Streams:

In General:

- Never pour or hose down anything into a storm drain or gutter.
- Divert your facility's downspouts away from the process area, especially if they outlet onto pavement. If you want to conserve on your water bill, consider collecting storm water in a rain barrel and using the water for wash downs and dust suppression in contained areas.
- Use proper site grading to improve storm water handling from the general plant site.

During Production:

- Store materials under cover whenever possible and away from drainage areas.
- Use berms or curbs around truck loading areas, aggregate piles, truck washing stations, drum wash-out areas, and chemical staging areas to capture contaminated storm water and process wastewater for proper treatment.
- Minimize the size of the process area. Pave and roof it to reduce exposure to rainfall.
- Reuse wastewater, wash water, and storm water for concrete batching, if your customer's specifications allow.

Loading/Mixing Operations:

- Load concrete trucks in a way to minimize airborne dust emissions.
- Vent all airborne dust emissions generated by material loading/mixing operations to fabric filtering systems
- Totally enclose the loading bay during the loading process. Dust tarps and other dust prevention materials are available for pre-existing equipment. Check with your suppliers for currently available dust prevention supplies.
- Provide equipment necessary to clean all concrete trucks and other vehicles after loading (preferably dry cleaning methods) and before exit from the property to wash off any dust and/or mud deposited on the wheels and/or vehicle body.
- Plan with the concrete truck driver exactly where rinsing can be done. Avoid locations where run-off will get into the street, storm drain or a body of water.

Waste Material Entering a Storm Drain Due to Lack of Pollution Prevention Activities

Washout:

- Locate washout areas at least 50 feet from storm drains, ditches and water bodies. Collect wash water and waste from this area for proper reuse or treatment or disposal.
- Wash out mixers and equipment only in designated areas, and never into storm drains, open ditches, streets, or streams.
- Washout location is often dictated by the contractor, however, you can familiarize your drivers with acceptable washout locations in the interest of promoting pollution prevention opportunities.

Fleet Maintenance:

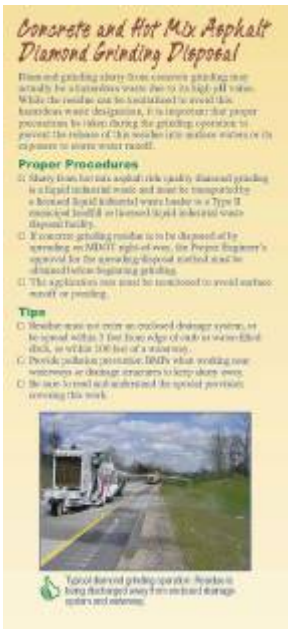
- Wash trucks in a covered bay that drains to a sanitary sewer.
- Clean up automotive fluid leaks with absorbent materials and dispose of properly. Never hose down leaks.
- If fuel is stored on site, have specific trained/certified personnel to handle spill response activities, and take these precautionary measures:
    - Secondary containment around fuel storage and waste tanks.
    - Regular inspection and maintenance of tanks and transfer equipment.
    - Covering fueling areas or preventing exposure to storm water.
    - Developing a spill incident response plan.
    - Training employees on proper fueling techniques and spill response.
    - Clearly posting emergency response phone numbers.
- If a spill occurs:
    - Determine the level of trained spill response needed. Safety first!
    - Stop the source of the spill immediately.
    - Deploy proper containment measures to prevent spill from reaching drains or surface waters.
    - Properly clean up and dispose of materials.
    - Document circumstances of spill to prevent future incidents.

General Housekeeping:

- Practice effective dust control measures. When dust settles, it can be picked up by storm water (this is called runoff) and deposited in lakes, rivers and streams.
- Clean up spills of cement and admixtures immediately to prevent them from entering a storm drain. Use dry clean-up methods (absorbent materials, sweeping, dust collection vacuum, wiping, etc.)
- Sweep or vacuum paved areas to remove accumulated dust and dispose of properly.
- Install and maintain sediment traps within the boundaries of your site.
- Install and maintain wastewater/material disposal areas where water can evaporate and concrete can harden for proper disposal. Empty area when 75% full.
- Train your employees in proper clean up, waste control, and disposal procedures.
- Post a list of operating procedures for equipment maintenance and waste disposal, including approved facilities/locations for waste disposal.
- Install signs adjacent to each washout facility to encourage proper use.

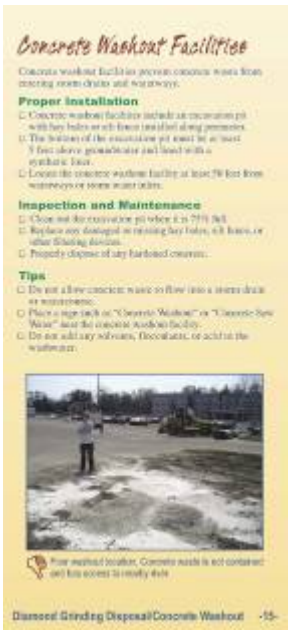
You may be wondering why the Michigan Department of Transportation (MDOT) is sharing this information with you. After all, they don't oversee storm water permits. Like you, MDOT has its own storm water permit requirements to fulfill because it maintains over

10,000 miles of roads and their associated drainage systems. Educating our contractors about preventing storm water pollution is one of our six minimum measures for compliance. MDOT is also continually addressing its own unique pollution prevention needs. One recent effort resulted in a quick reference pocket guide for use in the field. The guide includes a section on pollution prevention. The pages covering concrete diamond grinding operations and washout facilities are shown below. You can download a copy of the full guide at www.michigan.gov/stormwatermgt. Click on educational materials.


Concrete and Hot Mix Asphalt Diamond Grinding Disposal

Proper Procedures

Tips


Concrete Washout Facilities

Proper Installation

Inspection and Maintenance

Tips

Diamond Grinding Disposal/Concrete Washout -15-

Remember, anything on pavement can be washed into the storm drain and pollute our Great Lakes, rivers and streams. Polluted storm water runoff is our nation's number one water quality problem. Only rain belongs in the storm drain, so please represent your industry well and do your part to stop storm water pollution!

For more detailed information about pollution prevention relating to the concrete industry, please visit:

www.cabmphandbooks.com/documents/construction/WM-8.pdf
Includes details for making and removing a proper temporary concrete washout facility.

www.pinellascounty.org/environment
For a Free Pollution Prevention Manual (pdf file):
> click on Pollution Prevention (twice) in the left column
> click on Industrial Pollution Prevention
> choose the Concrete Batch Plant *Industry Manual*

For a Free Pollution Prevention Checklist (pdf file):
> click on Pollution Prevention (twice) in the left column
> click on Industrial Pollution Prevention
> scroll down and choose the Concrete Batch Plant *Opportunity Checklist*

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- Pinellas County, Florida, Environmental Management
- The Florida Department of Environmental Protection's Pollution Prevention Program and the National Ready Mixed Concrete Association's publication, *Environmental Management Practices* (Pub # 191).
- California Stormwater Quality Association's BMP Handbook
- AASHTO Center for Environmental Excellence
- City of Los Angeles Stormwater Program
- City of Newark, Delaware Public Works Department
- The Michigan Department of Environmental Quality Nonpoint Source Program
- The Michigan Department of Transportation Storm Water Management Program