August 2014

The Monthly Dirt

A Monthly Newsletter on the California Construction General Permit
By WGR Southwest, Inc.

CGR … is it really a problem?

It forms when revolving diamond blades, water, and concrete come together – a slurry mixture called CGR or concrete grinding residual. In California, it is something that must be collected and disposed of properly. Caltrans BMP Fact Sheet WM-8 states, "*Residue* [CGR] *shall not be allowed to flow across the pavement and shall not be left on the surface of the pavement.*" Caltrans requires that the slurry be collected and disposed of with other concrete waste. In the California Construction General Permit, it is addressed, rather generally, by requiring projects to "*prevent disposal of any rinse or wash waters **or materials** on impervious or pervious site surfaces or into the storm drain system*" and that "*dischargers shall implement measures to control all non-storm water discharges during construction.*" We in the storm water industry have long been taught, and have taught others, that concrete cutting and grinding slurries are bad for the environment and should be collected and taken off site. Thus, along California highways, you will often observe shop-vacs faithfully chasing the concrete saw. But you may be surprised to find out that CGR is not handled that way in every State. Some States actually encourage the placement of CGR along the shoulders of rural roads.

In 2009, the International Grooving and Grinding Association (IGGA) conducted a research project in conjunction with North Dakota State University to study CGR samples from five different highway projects across the country, including one from California's Interstate 10. The goals of the study included: 1) to determine the chemical composition and characteristics of CGR; 2) determine the effect of CGR on the mechanical properties of the soil; and 3) determine the effect of CGR on the grasses and plants that grow alongside the highway. The results were surprising.[1]

What is in CGR? Not so surprising was the pH value; which for all samples was around 12. Chemical oxygen demand (COD) ranged from 300 to 2,200 mg/Kg in the five samples. Total dissolved solids ranged from 1,420 to 5,430 mg/L. These test results are most likely why California considers CGR to be a threat to water quality. Interestingly though, the researchers found the metal concentrations and other chemical and physical properties, as also did a 2005 Caltrans study, to be consistent with that typical of surface soils.

How does CGR affect soils? The study showed that soil pH and electrical conductivity is likely to increase with the application of CGR. But, the research showed that the soil hydraulic properties tended to not be compromised and continued to allow infiltration of water into the soils.

Does CGR harm plants? The study was limited to Smooth Brome which is a common grass in North Dakota and other parts of the country. The results showed that an application rate of up to 8% of CGR to soil or 39 tons/acre was actually beneficial to plant growth. The data indicated that CGR assisted the plants with calcium uptake.

The bottom line of the study and the IGGA Fact Sheet was that the benefit or harm to the environment from CGR really depends greatly on the type of soil to which it is being applied. The IGGA claims that the burdensome regulations add cost to the grinding and sawing process which cause higher roadway project costs. They advocate that CGR placement on the project with proper pH control measures and controlled application rates is not necessarily a threat to the environment and could result in significant cost savings.

[1] The CGR study is summarized in a June 2011 IGGA Fact Sheet that is available at the following link. The fact sheet lists other technical references and publications related to the 2009 CGR study.
http://7e846f23de4e383b6c49-2fba395bb8418a9dd2da8ca9d66e382f.r19.cf1.rackcdn.com/uploads/resource/173/FSJune2011_concrete_grinding_residue.pdf

Slurry Management Procedure

The Concrete Sawing and Drilling Association (CSDA) has published a "best practice" fact sheet for the management of slurry resulting from concrete cutting and drilling. The fact sheet addresses pre-bid considerations, pre-job planning, and collection and control practices. It also discusses the use of filtration devices and recycling practices. The fact sheet can be downloaded from the CSDA website at:

http://c.ymcdn.com/sites/www.csda.org/resource/resmgr/imported/CSDA%20BP%20001%20Slurry.pdf

Some of the best practices identified in the CSDA fact sheet include the following:

- Determine the "low point" of a specific work area and let "gravity help out".
- Use "pigs", gutters, or other temporary berms to direct slurry to a collection point.
- Utilize 55-gallon drum vacuums to collect water and slurry. The 55-gallon drum will also help facilitate the settling of solids.
- Use vacuum hose attachments such as the "Slurry Slurp™" to effectively remove slurry from the surface.

  Slurry Slurp™ is available from www.gotblade.com

- Spray water rather than using constant flow.
- Filter the slurry and recycle the water; although it may be necessary to monitor and adjust the pH of the water.

Caltrans Requirements

According to the WM-8 Caltrans BMP Fact Sheet, any residue from saw cutting, coring, grooving, and grinding operations is required to be picked up by means of a vacuum device. Residue is not allowed to flow across the pavement nor be left on the surface of the pavement. Vacuumed slurry residue must be stored in an approved waste management structure or bin and properly disposed of with other concrete wastes. Groove and grinding operations are covered under Section 42 of the Caltrans Standard Specifications. It states that if authorized, the contractor may transport liquid grooving or grinding residue to an offsite location for drying. The offsite drying location must be identified and protected under the SWPPP or Water Pollution Control Program.

Upcoming Training …

Got SWPPP? Classes coming to Lodi:

- ✓ CPESC Review and Exam – Sept. 2 - 4, 2014
- ✓ QSP/QSD Training, October 21 - 23, 2014

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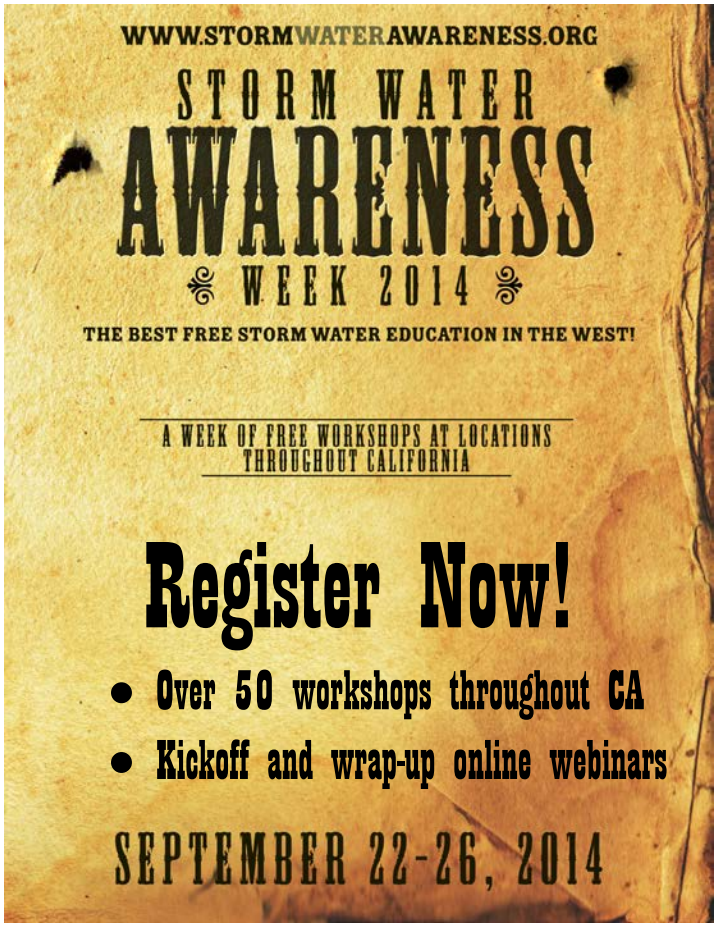
Need storm water training at your office or project location? Invite one of WGR's experienced QSPs to come and provide training for your crew.



Please contact us if you have any questions …

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