

## Your Storm Water Christmas Wish List

Have you gotten your Christmas shopping done yet? Or do you have one of those “hard to buy for” persons on your list? Storm water samplers are some of the **worst** to buy for because they are always prepared and don’t need a lot to keep them happy. But here are some holiday gift giving ideas for those water samplers on your list:

- ✓ GORE-TEX® PacLite® Rainy River™ Parka and Pants (What a deal, only \$119 for the parka, another \$119 for the pants.)
- ✓ Gore-Tex® Crusher Rain Proof Hat (at \$29.95 it makes a nice ensemble to the parka and pants. I recommend the color “dark mushroom”.)
- ✓ Baffin Enduro Rain Boots (A steal! Only \$42. You can’t go wrong with these boots.)
- ✓ Battery Heated Wader Socks (Keep your sampler’s toes-ies warm with these battery operated socks. At only \$24.99, it will make him a happy motivated sampler.)
- ✓ Davis Vantage Pro2 Weather Station (Your sampler needs to be informed. Buy him the state of the art, wireless weather station to help him monitor the weather outside and determine the optimal time for sampling. You can’t go wrong with this deal, a bargain at \$535.95 !)



For more gift giving ideas, please call Santa’s little helpers at WGR to find that perfect gift for the sampler on your list.

---

## The December and End of the Year “To Do List”:

- December Storm Water Observations (Form 4)
- Storm Water Sampling (you need two samples from each representative outfall)
- Quarterly Non-Storm Water Observations before Dec. 31 (Forms 2 & 3)
- Review your analytical results.





## Zinc – Where does it come from? What can you do about it?

Over the past several years, more and more focus has been placed by the State and Federal government on zinc in storm water discharges. Frequently, monitoring requirements for zinc is being added to storm water permits. In actuality, the current **California General Permit** requires any permittee to analyze for all potential pollutants that might be associated with their industrial activity. However, zinc is often overlooked by permittees and not monitored because it is not believed to be associated with their industrial activities. While WGR is not necessarily advocating that all General Permittees add zinc to their monitoring list, we do expect to see the State add it to the monitoring requirements when the permit is renewed. This is already the case in Oregon and Washington. The Federal benchmark value for zinc is 0.117 mg/l (117 µg/L). However, many States are starting to impose numeric permit limits and action levels for zinc.

So, where does it come from? Here are some of the common sources of zinc at industrial facilities:

- **Galvanized Metal Surfaces** – There are many galvanized metal surfaces at industrial facilities including roofs, HVAC ductwork, gutters and downspouts, chain-link fence, light poles, bay doors, steps and walkways, and even storm sewer pipes. Galvanized surfaces are coated with zinc to protect them from corrosion or rust. Zinc is gradually dissolved and released from these surfaces when they come into contact with water. From the perspective of water quality, zinc in runoff from these metals can be high, between about 1,000 – 15,000 µg/L (parts per billion). Roofs having galvanized materials can produce high concentrations of zinc in their runoff. A limited study found runoff from a roof with galvanized ducts ranging from 400 -500 µg/L zinc. An identical roof, but without galvanized surfaces, had only 50 µg/L in its runoff (Golding, 2006).
- **Parking Areas, Loading Docks, and Pave Grounds** - Contributions of zinc to the parking areas, loading docks, and paved grounds common to industrial facility sites appear to come from three primary sources: motor oil, hydraulic fluid, and tire wear. Both motor oil and hydraulic fluid contain high concentrations of zinc, about 0.1% by weight (1,000,000 µg/l). To get a sense of the extent these fluids can add zinc to runoff, when ½ cup of motor oil is added to an area 100 feet x 100 feet of paved surface, the runoff is calculated to be about 250 µg/L or parts per billion. This is for a depth of water of 0.02 inch rain, typically sufficient rainfall to cause runoff. Zinc is used in the manufacture of tires. Tires contain zinc at about 1% by weight. Tire tread wear releases particles of zinc laden dust. Common sources of tire dust are forklifts, trucks, and truck trailers. When they make tight turns, a considerable amount of zinc is released. National data shows typical zinc concentrations of 225 µg/L for storm water runoff from industrial parking lots (Claytor and Schueler, 1996).
- **Other Sources** – Include some white paints that contain zinc oxide, some paints with galvanic protection, some wood preservatives, and moss control products.

So, you can see, it does not take much to exceed the zinc benchmark of 117 µg/L. But what can be done about it? Here are some helpful zinc BMP tips:

### Galvanized materials

- Replace galvanized items.
- Paint galvanized surfaces as an alternative to replacing them.
- Place chain-link fence on vegetated, not paved areas to reduce runoff and absorb metals.
- When galvanized chain-link is on a paved surface, consider replacing it with aluminum chain-link. They cost about the same. Aluminum fence is said to have a life of 10 – 15 years as compared with 30 years for galvanized.
- Cover galvanized surfaces to prevent exposure to water.
- Use vacuum sweepers to remove motor oil on particles and debris as well as tire dust. Vacuum sweepers were discussed in the October issue of **Rain Events**.

### **Parking and Paved Areas:**

- Maintain/repair equipment regularly. Check for equipment leaks. Establish a schedule to routinely check hydraulic systems and motor oil levels. Where possible, park equipment in the same location(s) so that you may detect leaks more quickly. Clean evident spills or oily/liquid spots.
- Cover outdoor operations. Prevent storm water from flowing into the covered areas.
- Use a vacuum sweeper to remove coarse and fine solid particles.
- Pave areas where oil and hydraulic fluid may leak. This provides a surface for thorough cleaning.
- Reduce the amount of traffic maneuvering in tight turns.
- Remove dust from surfaces exposed to rain or runoff. Sweep with industrial vacuum sweepers to clean paved areas. Cleaning methods should be appropriate for other surfaces such as product containers and railings.
- Consider using forklift tires made from non-rubber materials. Some do not contain zinc such as polyurethane. ([roadrunnertires.com](http://roadrunnertires.com); [orbitindustrial.com](http://orbitindustrial.com)).

### **Other measures:**

- Do not use (white) paints containing zinc oxide.
- Do not use zinc-rich paints intended to provide galvanic protection.
- Do not use a moss remover containing zinc.
- Avoid the application of fertilizers that contain zinc. Do not over-apply.

If requirements to monitor for zinc have not yet come to your facility, that's great! But beware ... they are coming. Start making an inventory of zinc containing materials that come into contact with storm water at your site. Put into place some of the above referenced BMPs which will also help with other pollutants such as TSS and oil & grease. For more information please refer to the following excellent guidance documents prepared by the State of Washington Department of Ecology, from which this article was adapted. Use the zinc source inventory worksheet included in the "[Suggested Practices to Reduce Zinc Concentrations in Industrial Stormwater Discharges](#)".

---

## **We Have a Winner !!!**

We had four responses, again, on last month's storm water contest, which means you still have really good odds of winning a good prize.

*"List at least four examples of Authorized Non-Storm Water Discharges."*

*Curt Chipman writes: "1. Water from an outside hose bib used to water down our ice in our cooler to run quality assurance samples, 2. Water from our ice machine used in local lab testing of our quality assurance samples, 3. Periodic purging and testing of our fire water system including fire drills, 4. Condensate from our air conditioning systems"*

**Curt will be sent a \$25 gift card to Starbucks for Pumpkin Spiced Lattes.**

---



## *December STORM WATER CONTEST*

By December 31, submit a response for the following.

“Zinc is one of several potential pollutant metals; name **3** other potential metal pollutants and where they might come from.”

All persons submitting correct answers will be placed in a drawing. The winner will receive a \$25 gift card to Starbucks for an Eggnog or Peppermint Holiday Latte. You could always give your gift card as a gift to that special sampler on your gift list. Please submit your entries to [jteravskis@wgr-sw.com](mailto:jteravskis@wgr-sw.com) .



***Please contact us if you have any questions ...***

**Rain Events Newsletter:**

John Teravskis [jteravskis@wgr-sw.com](mailto:jteravskis@wgr-sw.com)  
(209) 334-5363 ext. 202

**Technical Questions about Storm Water Compliance?  
Call ...**

Aaron Ortiz, [aortiz@wgr-sw.com](mailto:aortiz@wgr-sw.com), (209) 810-5151  
John Teravskis, [jteravskis@wgr-sw.com](mailto:jteravskis@wgr-sw.com) , (209) 649-0877  
Bill Senner, [bsenner@wgr-sw.com](mailto:bsenner@wgr-sw.com) , (310) 629-5260