

DTSC Public Workshop on Chemicals in Motor Vehicles



CALIFORNIA STORMWATER
QUALITY ASSOCIATION®

Richard Watson, Co-Chair, CASQA True Source Control Subcommittee
Fred Krieger, Environmental Engineer

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California Stormwater Quality Association
Dedicated to the Advancement of Stormwater Quality Management, Science and Regulation

Vision for Sustainable Stormwater Management

October 2020

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Appendix: CASQA's Vision-at-a-Glance

Principle #1: Program Implementation – Projects and programs that use stormwater as a resource, protect water quality and beneficial uses, and efficiently minimize pollution are critical for sustainable stormwater management.

Action 1.1: Maximize Urban Stormwater Capture

Action 1.2: Minimize Pollution Through True Source Control

Action 1.3: Maximize Effectiveness of BMPs, Green Stormwater Infrastructure, and Low Impact Development

Principle #2: Permits, Regulations, and Legislation – Permits, regulations, and legislation need to support sustainable stormwater management.

Action 2.1: Develop a Statewide Regulatory Approach Focused on Sustainable Stormwater Management

Action 2.2: Develop Regulations and Guidance to Support Sustainable Stormwater Management

Action 2.3: Promote Legislation That Is Essential for Sustainable Stormwater Management

Principle #3: Public Education – Public awareness, understanding, appreciation, and support of the value of stormwater is essential to sustainable stormwater management.

Action 3.1: Increase Support for Funding and Sustainable Stormwater Projects

Principle #4: Funding – Significant financial investment is required to achieve sustainable stormwater management.

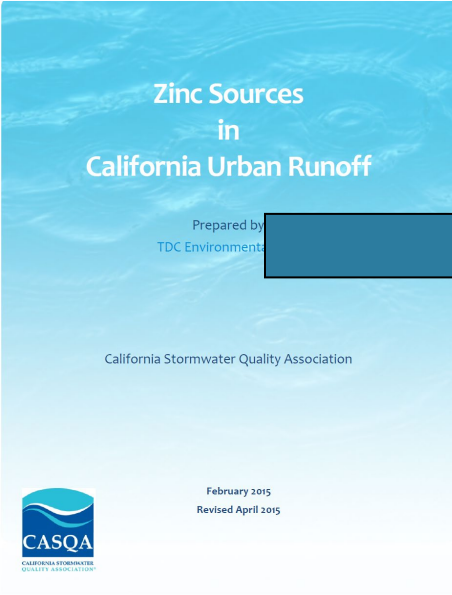
Action 4.1: Determine the Resource Needs for Sustainable Stormwater Programs

Action 4.2: Develop a Dedicated Funding Source for Stormwater Programs

Action 4.3: Increase Supplemental Funding Opportunities for Stormwater Programs



CASQA's Zinc Initiative



Legislation?



Safer
Consumer
Products
Program



Goal of CASQA's Petition

- Eliminate or reduce zinc as a water pollutant by focusing on a major source – zinc in tires.
- Facilitate compliance with NPDES permits issued by the State and Regional Water Boards
 - *Submit petition that demonstrates potential for exposures and adverse impacts from zinc in tires*

Impacts: Impaired Waterways

CWA 303(d) list of impaired waterways

- Waterways impaired by zinc and other pollutants are included in the Clean Water Act 303(d) List;
- Listing factors include the number of samples and exceedances of water quality standards, data quality, waterway data, documentation that the results are reproducible, etc.

Impacts:

Total Maximum Daily Loads

- The State / Regional Water Boards (or EPA) identify the reduced pollutant loading that will attain standards in an impaired waterway
- The TMDL allocates the acceptable (“safe”) loadings to the various sources of the pollutant addressed by the TMDL
- *Sources may include:* wastewater treatment plants, stormwater, industry, construction projects, natural sources, etc.

Compliance Impacts: NPDES Stormwater Permits

Receiving Water Limitations	Discharges shall not cause or contribute to an exceedance of water quality standards
Total maximum daily loads (TMDLs)	Permittees must reduce the discharge of pollutants to achieve TMDL waste load allocations assigned to the permittee

Potential Water Quality Impacts: Criteria for zinc aquatic toxicity

	Inland Waterways: Dissolved Fraction	Ocean Waters: Total Recoverable
Freshwater	120 ug/L*	
Saltwater (max exposure)	90 ug/L	
Saltwater (continuous exposure)	81 ug/L	
Saltwater (6 month median)		20 ug/L
Saltwater (instantaneous max)		200 ug/L

* actual criteria may vary with hardness in the receiving water

Impacts: Zn in Urban Stormwater

Example: Los Angeles River and Tributaries Metals TMDL:

During wet weather, most of the metals loadings are in the particulate form and are associated with wet-weather storm water flow. On an annual basis, storm water contributes about 40% of the cadmium loading, 80% of the copper loading, 95% of the lead loading and **90% of the zinc loading** [*emphasis added*]

- Stormwater is a major source of zinc in urban waterways

Impacts:

Instream zinc exceedances in urbanized areas

Location	% Vacant Land	#Samples	#Exceed
Dominguez Channel at Artesia Blvd. S28	0.0	4	4
Ballona Creek at Sawtelle Blvd. S01	11	4	4
Coyote Creek at Spring St. S13	14	4	4
Los Angeles at Wardlow Rd. S10	40	4	4
Santa Clara River S29	87	3	0
Malibu Creek at Piuma Rd. SO2	79	4	0
San Gabriel River at SGR Parkway S14	67	3	0

Are tires a source?

Edge-of-pavement monitoring for zinc

Monitoring location	Dissolved ($\mu\text{g}/\text{L}$)	Total ($\mu\text{g}/\text{L}$)
Sacramento	14.8	74.3
Cotton-wood	41.4	130.9
Redding	15.8	39.0
San Rafael	43.5	119.7
Irvine	79.8	290.3
Moreno Valley	261.4	351.2
San Onofre	77.9	279.5
Yorba Linda	137.6	329.8

Impacts: Direct measurement of impacts on aquatic life

- **Chollas Creek and San Diego Bay**

Impact zone was at times as large as 2.25 km² and about half the flow was toxic to marine life based on sea urchin fertilization tests.

- **Ballona Creek and Santa Monica Bay**

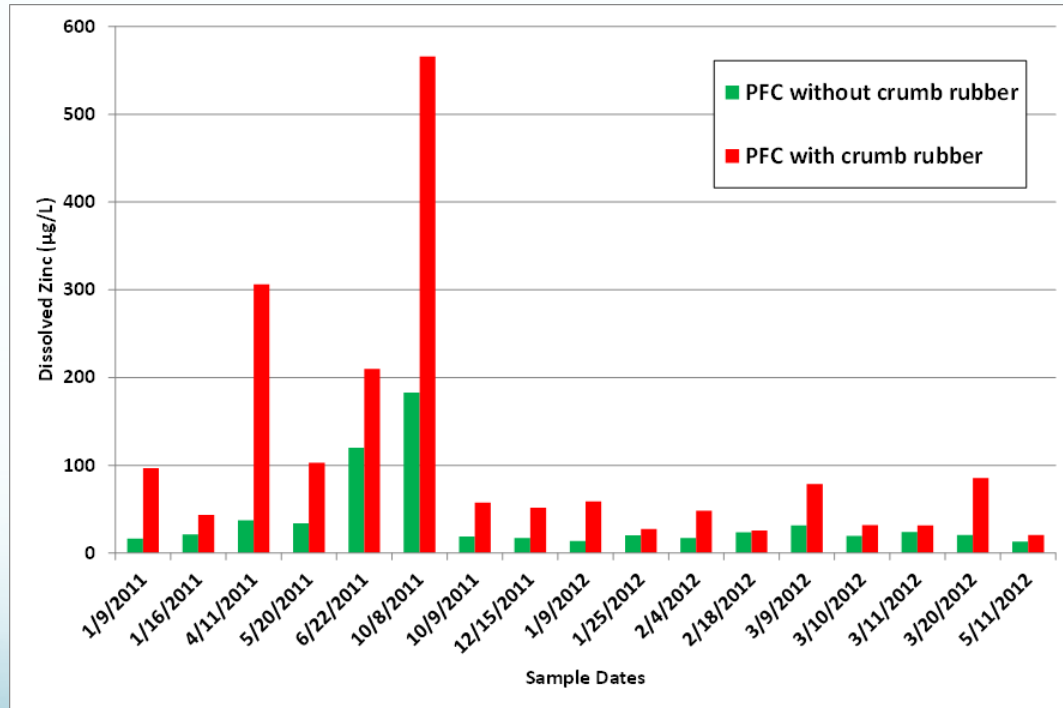
Zinc was the most important toxic constituent identified in stormwater.

Copper and other unidentified constituents may also be responsible for some of the toxicity measured.

Additional source concerns: Tire rubber used in paving

- California law requires Caltrans to use crumb rubber from tires in 35% of its paving projects
- This crumb rubber currently contains zinc
- Studies have shown an increase in zinc in runoff when recycled rubber is used in the surface layer in asphalt

Paving (permeable friction course): zinc concentrations



Source: Barrett, M. Porous Pavement and Open Graded Friction Course.
Nov, 5, 2012. Presentation – CASQA 2012 Annual Conference.

Why True Source Control Matters: (LA Region)

Pollutant	Control options
Copper	<ol style="list-style-type: none">1) Phase out copper in brake pads (underway)2) Adopt EPA's 2007 biotic ligand model (BLM) for setting WQ objectives (being considered in LA Region)
Lead	<ol style="list-style-type: none">1) Leaded gasoline banned for most uses in 19962) Lead tire weights banned in new vehicles in 2010
Zinc	<ol style="list-style-type: none">1) Reduce or eliminate use in tires2) Develop alternative WQ standard for zinc3) Construct and operate stormwater treatment facilities

Feasibility of reducing the use of zinc in tires

- Article in *Rubber & Plastics News* (10/3/2005, updated 11/15/2012):
Michelin also said it is studying ways to reduce its use of zinc oxide as a vulcanization accelerator, because zinc salts—which are soluble in water—are considered a toxic substance....
The solutions being considered reduce zinc oxide use by 50 to 80 percent, Michelin said.
- Several patents for the production of reduced-zinc tires are assigned to tire manufacturers

Working Together We Can Make a Difference!

Contacts:

Karen Cowan (Executive Director)
karen.cowan@casqa.org

Richard Watson
CASQA's True Source Control Subcommittee (Co-Chair)
Richard Watson & Associates, Inc. (RWA)
(949) 394-8495
rwatson@rwaplanning.com