

ARMA Health, Safety, and Environment Committee

ARMA Health, Safety, and Environment Committee Update

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ARMA Fall Board of Directors Meeting
November 2, 2017



Goals & Objectives

- Improve engagement/involvement from the different member companies.
- Identify and create best practices that can be shared with all member companies (particularly around Safety).
- Get ahead of potential issues by focusing on key projects such as the EPA Asphalt RTR, EPA Fiberglass RTR, Puget Sound/Washington Roof Runoff Study, etc.



ARMA HSE Committee Update

- ARMA Accident Prevention Contest Summary
- EPA MACT/GACT RTR Update
- EPA Fiberglass RTR Update
- ARMA Washington Puget Sound Update

ARMA Accident Prevention Contest



Accident Prevention Contest Summary



ARMA Accident Prevention Contest

Participation Overview

Current Participation:

- 16 of 18 Regular Member Companies

Total Plants in Program, 4Q2016:

- 110

Total 2015 Labor Hours Reported:

- 17,861,664

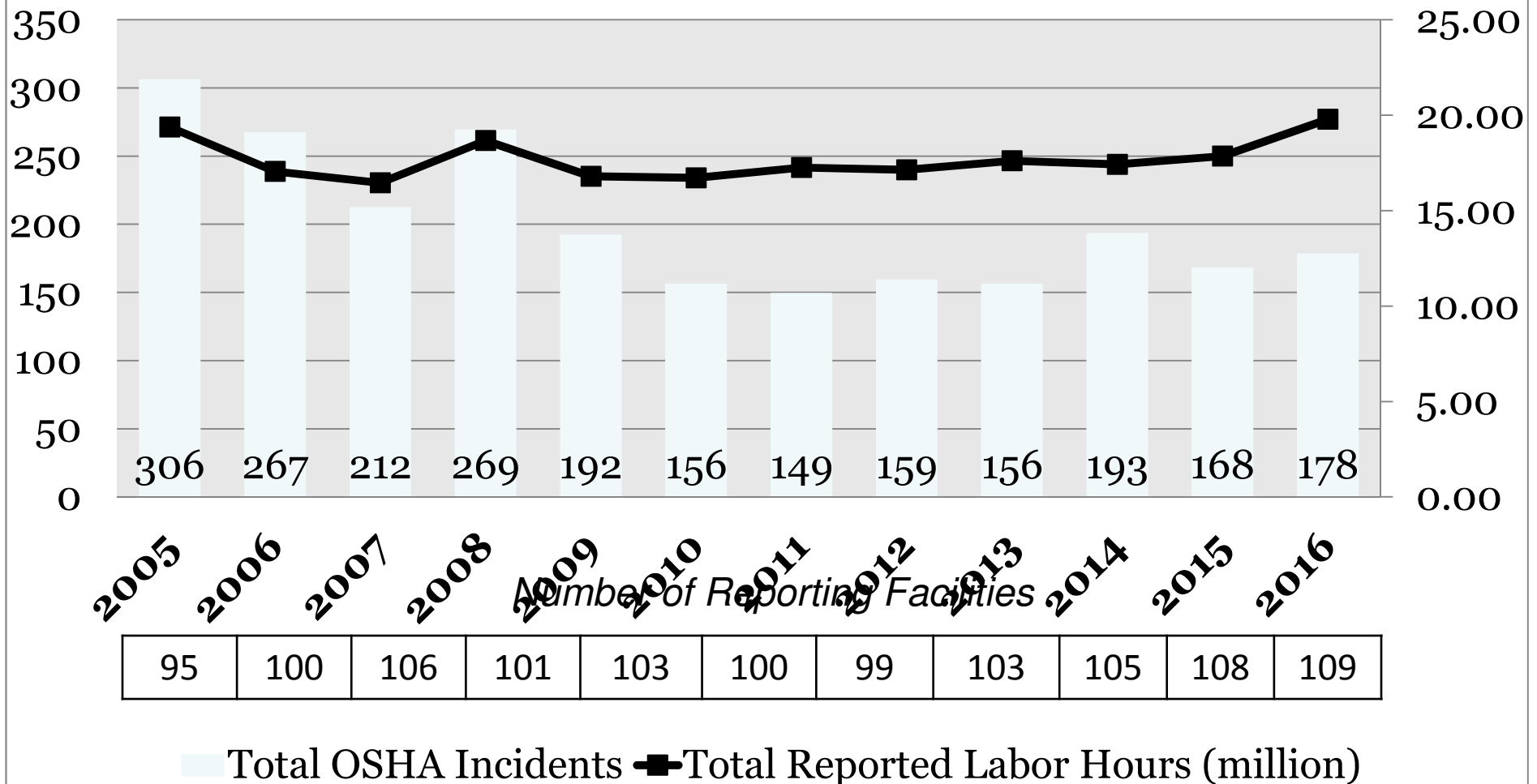
Total 2016 Labor Hours Reported:

- 19,791,051



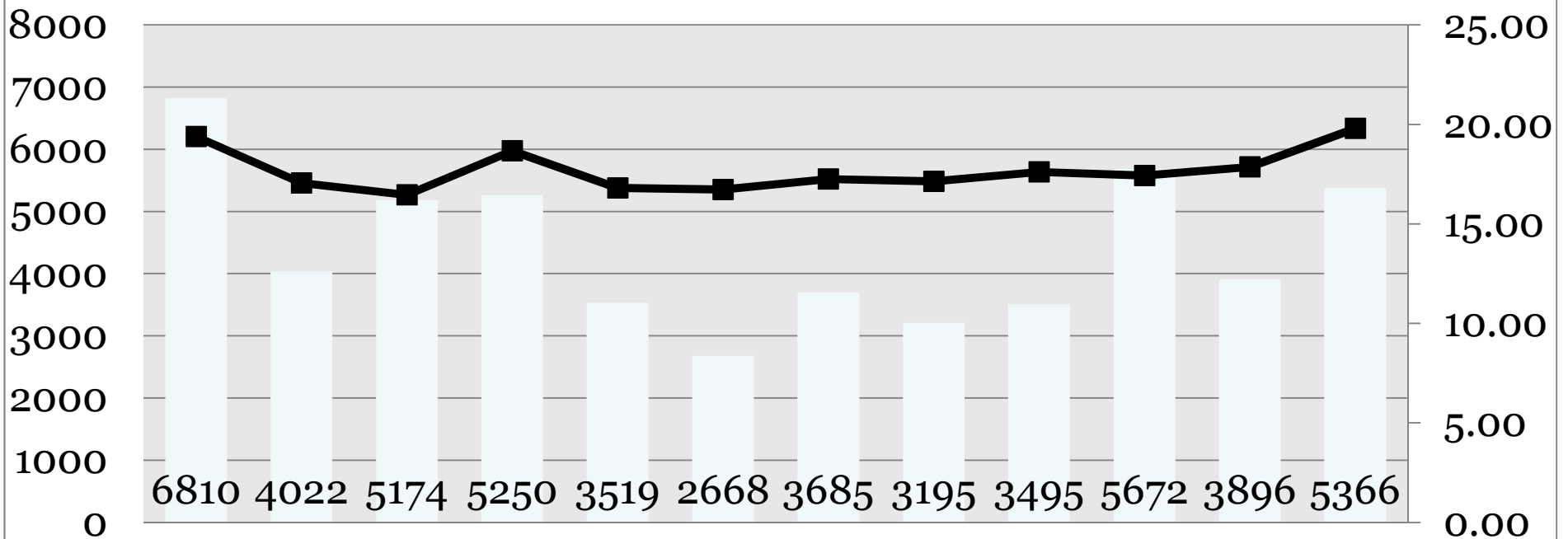
ARMA Accident Prevention Trend Analysis

Total Reported OSHA Incidents



ARMA Accident Prevention Trend Analysis

Total Lost / Restricted Workdays



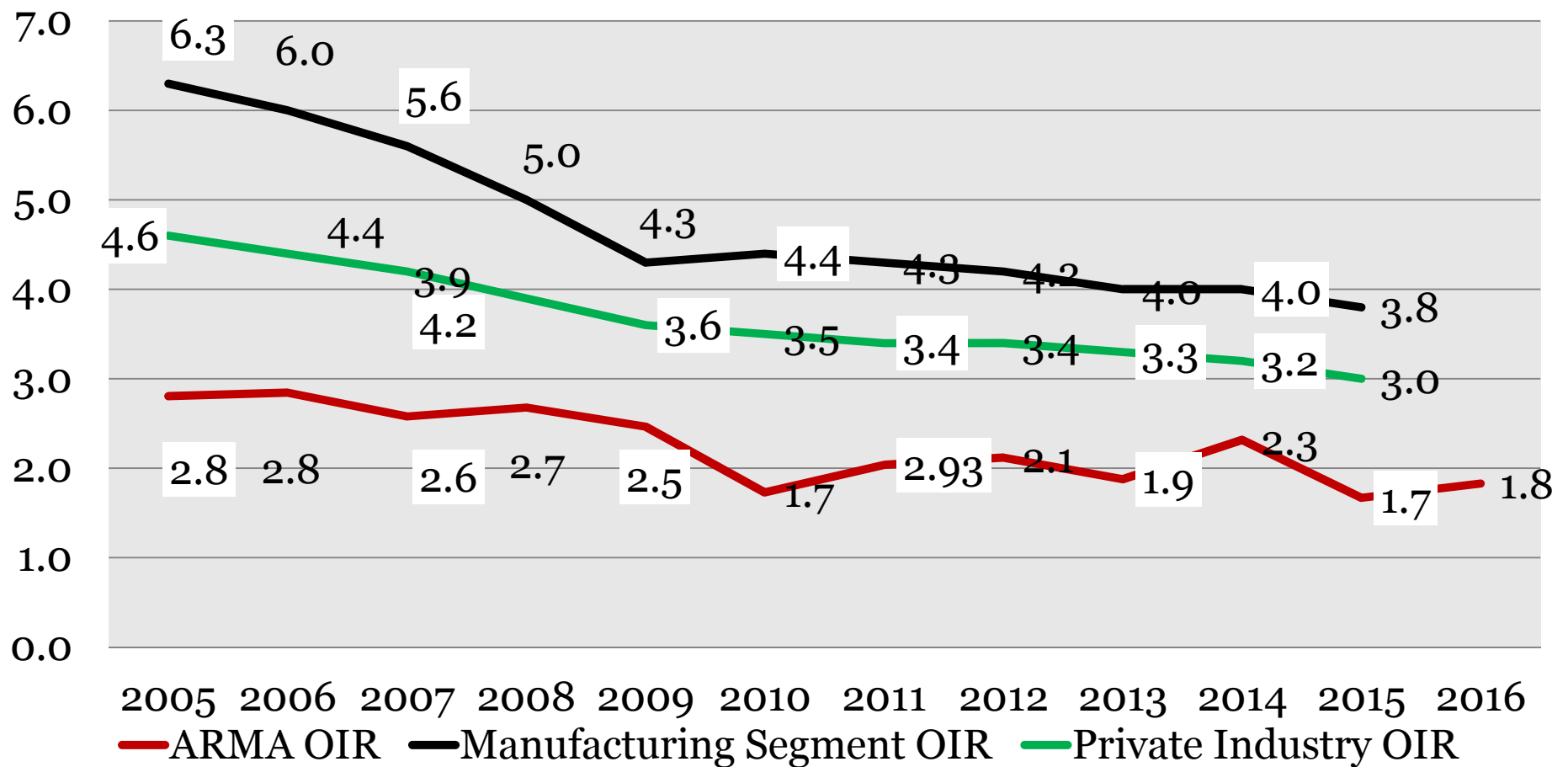
Number of Reporting Facilities

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
95	100	106	101	103	100	99	103	105	108	109	

Total Lost / Restricted Workdays
 Total Reported Labor Hours (million)

ARMA Accident Prevention Trend Analysis

Combined Groups – ARMA OSHA Incidence Rate vs. Industry



EPA Risk and Technology Reviews



- **Asphalt MACT/GACT**
- **Fiberglass MAT**



EPA ROOFING ASPHALT RTR Update

- EPA submitted information collection requests (ICRs) under Section 114 of the Clean Air Act on June 23 to the five companies that own/operate the eight facilities that are “major sources” of HAPs and are subject to MACT standards.
- Four of these facilities are owned by two ARMA members. Three are owned by members of AI, which is partnering with ARMA in responding to this RTR.
- Responses were submitted September 30. Ramboll Environ, an environmental consulting firm with deep expertise in RTRs, assisted in developing these responses.

EPA ROOFING ASPHALT RTR Update

- Ramboll to conducted risk modeling designed to show what EPA is likely to find based on its assumptions.
- The result indicates that EPA may find that cancer risks are unacceptably high and warrant consideration of more stringent controls:
 - chromic acid (VI), 1,3-butadiene, Formaldehyde, Benzene, Naphthalene, and ethylbenzene.

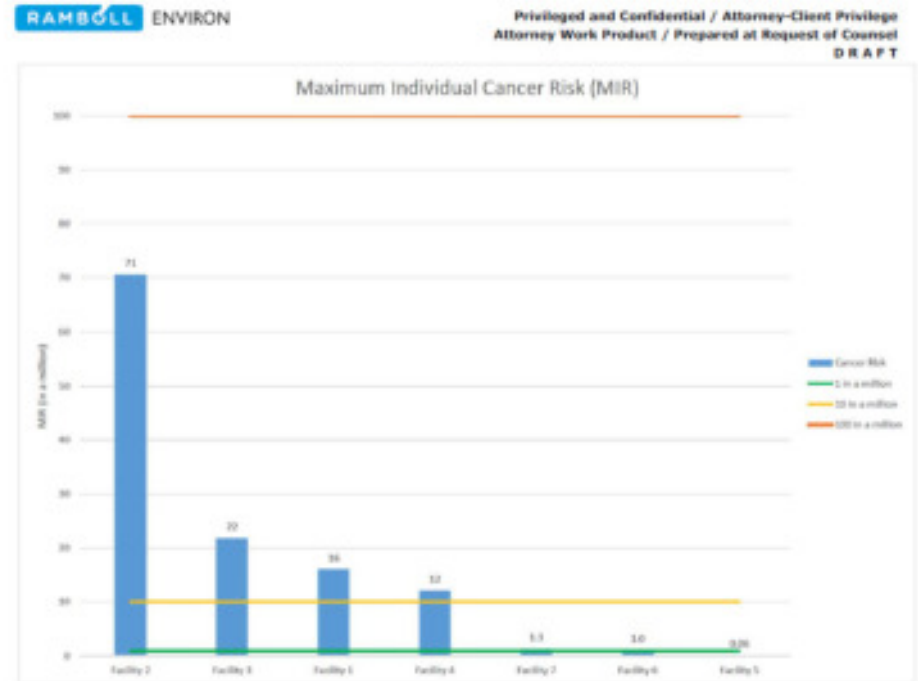


Figure 1. Estimated Maximum Cancer Risk

EPA ROOFING ASPHALT RTR Update

- Ramboll is updating the risk modeling to incorporate the ICR submissions, which included corrections to EPA's modeling inputs such as emission factors, source type, release height, exit temperature, stack diameter, dimensions, locations.
- It is important to keep in mind, however, that EPA is not required to accept such corrections and often rejects many of them.
- In addition, Ramboll prepared and submitted a technical analysis of EPA's emission factor for chromic acid (VI), which concluded that EPA's emission factor is too high by a factor of 13 to 25 or more.

EPA ROOFING ASPHALT RTR Update

- Ramboll is conducting an analysis of EPA's emission factor estimates for the five other significant HAPs we expect EPA's modeling will identify, and that analysis will be submitted to EPA once it is completed in a week or two.
- Going forward, we expect that EPA will conduct its own risk modeling and begin work on a proposal. Final action on this RTR is subject to a court deadline of March 13, 2020.



EPA Risk and Technology Reviews



- Asphalt MACT/GACT
- **Fiberglass MAT**



EPA Fiberglass MAT RTR Update

- No mandatory Section 114 ICRs sent out for this RTR
- Member companies have corrected the risk modeling inputs received from the EPA
- EPA has suggested that the Fiberglass Mat cancer risk was close to but not above the 1 in a million level, in which case more stringent risk-based standards would appear unlikely
- Members have decided to not engage Ramboll Environ to conduct risk modeling at the current juncture, but will do so when there are indications that the Agency may find risks that are unacceptably high



ARMA Puget Sound Roofing Study

Chemical & Toxicological Analysis of Roof Runoff Activity



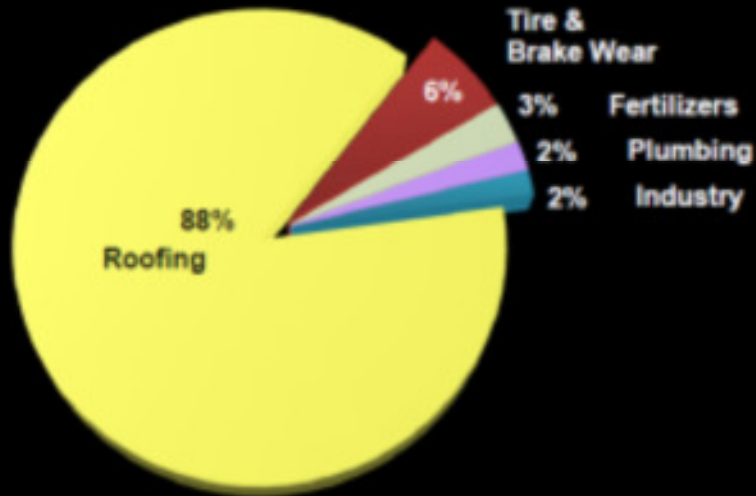
Washington Roof Runoff Study

Chemical & Toxicological Analysis of Roof Runoff Activity Overview

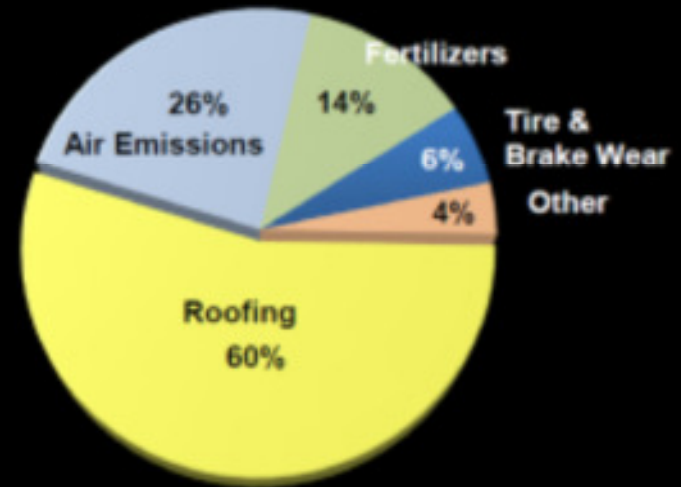
- Washington Stormwater Center finished the roof runoff study.
- As of August, sampled eight rain events.
- Ran both the *C. dubia* and the zebra fish on fresh sample (rather than freeze sample).
- Tested coho salmon toxicology experiment during final large, (>0.5 in) rain event to run the coho toxicology experiment.



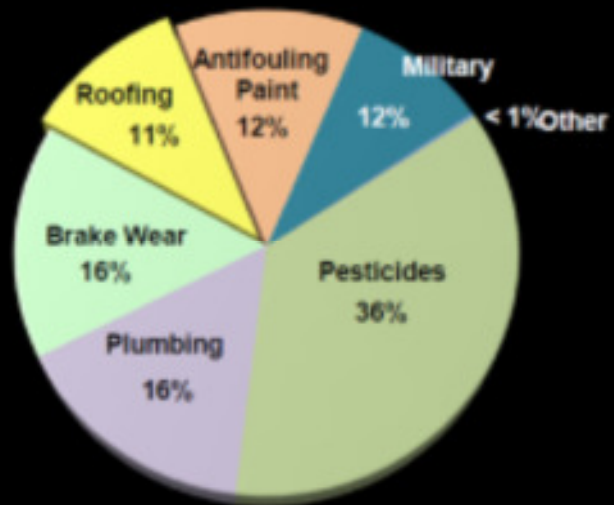
Zinc



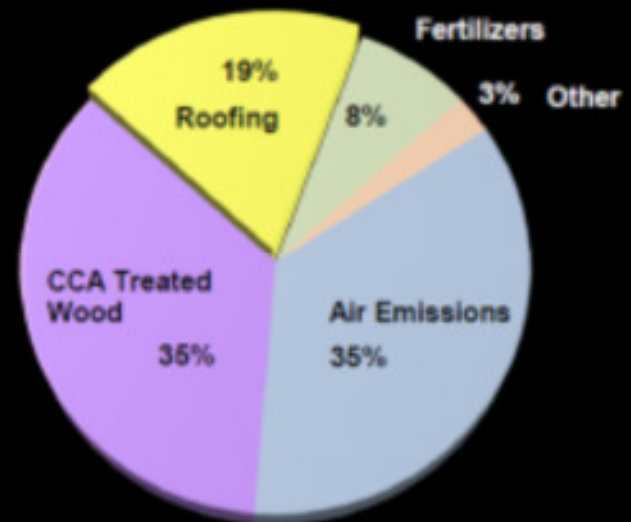
Cadmium



Copper



Arsenic



Washington Roof Runoff Study

Conclusions from Round 2:

- Good news: New asphalt shingles, release low concentrations of metals.
- New roofing materials generally released low concentrations of metals. Exceptions:
 - Copper and arsenic from the treated wood
 - Copper from the copper
 - Zinc from the Zincolume[®] and EPDM



Washington Roof Runoff Study

Conclusions from Round 3:

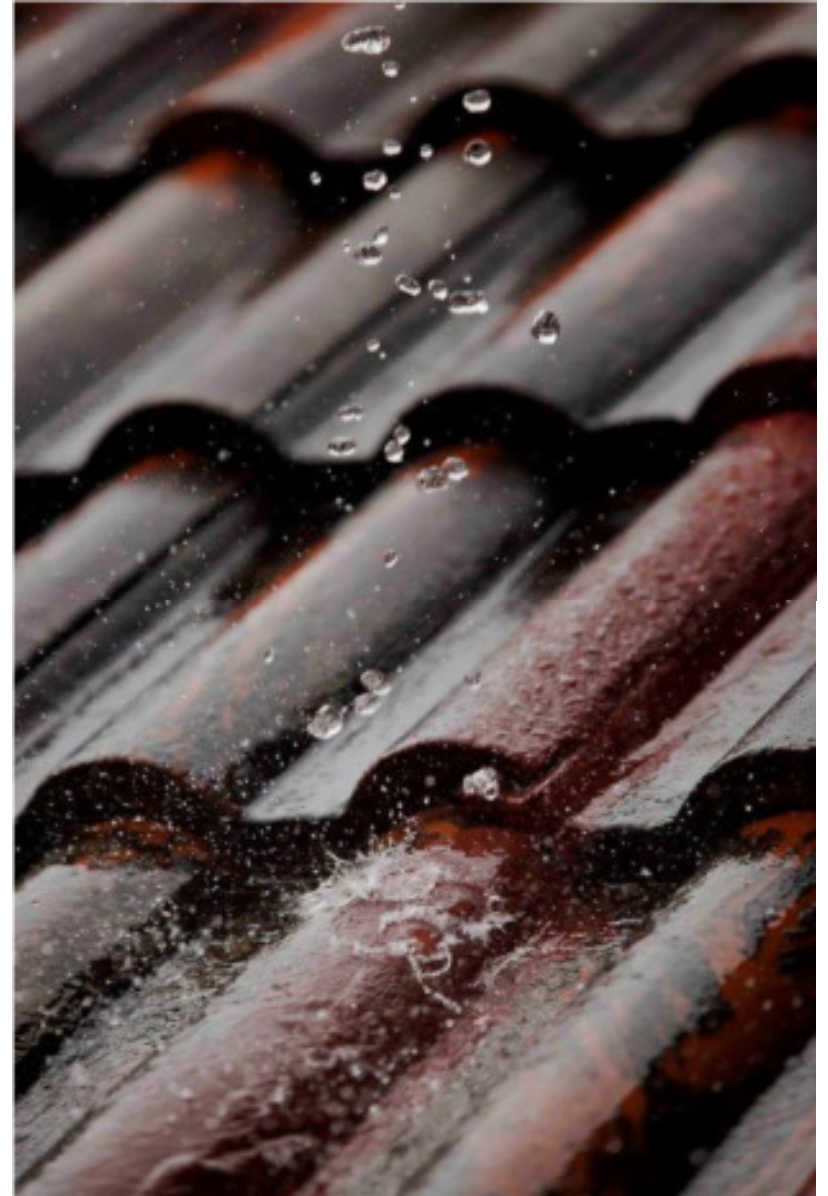
- Good news: Coho Salmon Test Results
 - Copper panel - 100% Mortality
 - Asphalt roofing shingles - 0% Mortality
- Concerns:
 - C. Dubia Test Results
 - Copper panel-100% mortality
 - Treated wood shake and Zincolume[®] > 96% mortality
 - Algae resistant asphalt shingle-87% mortality
 - Zebra Fish Results:
 - Developmental abnormalities and mortalities for all panels

Washington Roof Runoff Study

- ARMA member comments were submitted on Sept 29.

Next Steps

- To address concerns, WSC will clarify two harmful factors for runoff in report:
 - Air Deposition
 - Other Sources (i.e. Roads)



ARMA HSE Committee Report

Questions?

