



ARMA Health, Safety, and Environment Committee Report

November 4-5, 2009

**Chairman: Bob Hockman
TAMKO Building Products, Inc.**



ARMA Board Meeting Discussion Topics

- Post Consumer Shingle Recycling
 - Recycling Seminar
 - Washington State Waste Issue
 - EPA C&D Waste Documents
- Injury Education Safety Contest Results
- IARC Asphalt Fumes Related Activities Exposure
 - Mouse Skin Painting Study Results
 - Nested Case Control Study Results
 - Tear-off Exposure Study
 - Rome Symposium
- CONCAWE Bitumen REACH Registration
- ARMA Comments on Proposed Asphalt Roofing GACT
- ARMA Comments on Greenhouse Gas Reporting



In November 2008, ARMA Board of Directors approved the following:

- Focus on the recycling of post consumer shingle tear offs.
- Monitor the issue for members and share useful information with key groups.
- Support the next shingle recycling forum and www.shinglerecycling.org.



Shingle Recycling Forum



ANNOUNCING: The 4th ASPHALT SHINGLE RECYCLING FORUM

**Implementation: Beyond the Barriers
November 5 & 6, 2009
Chicago, IL**

ADDITIONAL INFO →

- **ARMA has been active in forum planning.**
- **ARMA President will kick off second day.**
- **Forum emphasis is on “how” rather than “why”**



Topics include:

- Environmental Benefits of Shingles in Road Construction.
- Value of Recycled Asphalt Shingles in Hot Mix Asphalt.
- Operating a New Shingle Recycling Facility Moderator.
- Shingle Recycling Specifications and Ongoing Research.
- Alternate End Uses and Processing Techniques.



Washington State Roofing Waste Issue

- WA Dept of Ecology states that roofing material, when handled outside of a contained and controlled environment presents “unacceptable risks to human health and the environment.”
 - Dept of Public Health for Seattle & King County states that “unacceptable levels of risk are associated with use as a mulch, gravel substitute, and unsealed road surface.”
 - ARMA has submitted multiple FOIA requests for the basis for these statements.
- Appears to be related to the earlier Oregon mulch issue.**



- EPA asks ARMA to provide comments on their beneficial use of secondary construction and demolition waste (C&D) report.
 - EPA is trying to assess environmental, human health, and economic outcomes of specific C&D material programs.
- ARMA provided technical comments and expressed interest in partnering with EPA to promote programs that lead to increased recycling of C&D materials.**



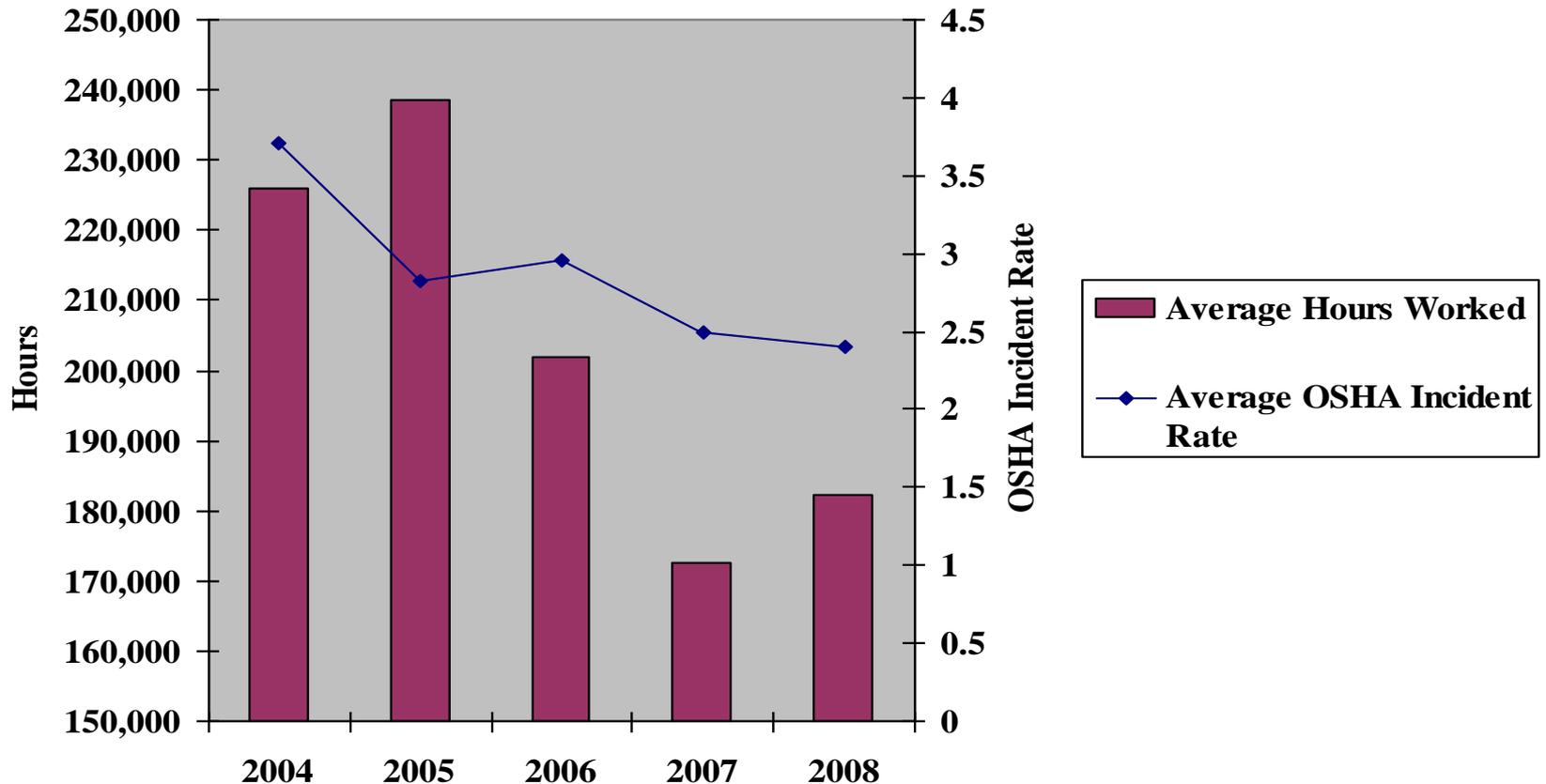
Injury Education and Safety Contest

- The ARMA HSE Safety Contest proactively monitor work place safety initiatives while encouraging a safe working environment.
- ARMA's quarterly report is back on schedule – third quarter 2009 results recently distributed to HSE Committee.
- In addition to quarterly reports, more information and charts can be made available as requested by members.



Injury Education and Safety Contest

Annual Incident Report Chart All Facilities





Asphalt Fumes Cancer Risk Assessment Mouse Skin Painting Studies Results

“Straight Run Asphalt”

- The paving fume condensate was not carcinogenic in the mouse dermal bioassay.
- Only mild skin irritation was noted in the animals receiving the test material.
- No other adverse findings were related to test material application.
- Animals tolerated exposures well and survival was consistent with the control group.



Asphalt Fumes Cancer Risk Assessment

Mouse Skin Painting Studies Results

"BURA"

- "Resulted in a weak tumor response after significant irritation late in the study."
- NIOSH studies caused tumors, as expected.
- Clear differences in toxicological properties between the field fume condensate and NIOSH fume condensate.

→ In response, ARMA has co-funded Initiation/Promotion study to further assess the mechanism causing the tumors.



Asphalt Fumes Exposure Assessment

IARC Nested Case Control Study Results

- “excess mortality from lung cancer relative to the general population observed during the cohort phase of the study is likely attributable to the high consumption of tobacco experienced by these workers, and possibly to coal tar exposure, while other occupational agents do not appear to play an important role.”
- “there was no consistent evidence of an association between indicators of inhalatory or dermal exposure to bitumen and lung cancer risk”.

→ Very good result for asphalt industry. Human study results are much more significant in IARC review process than animal study results.



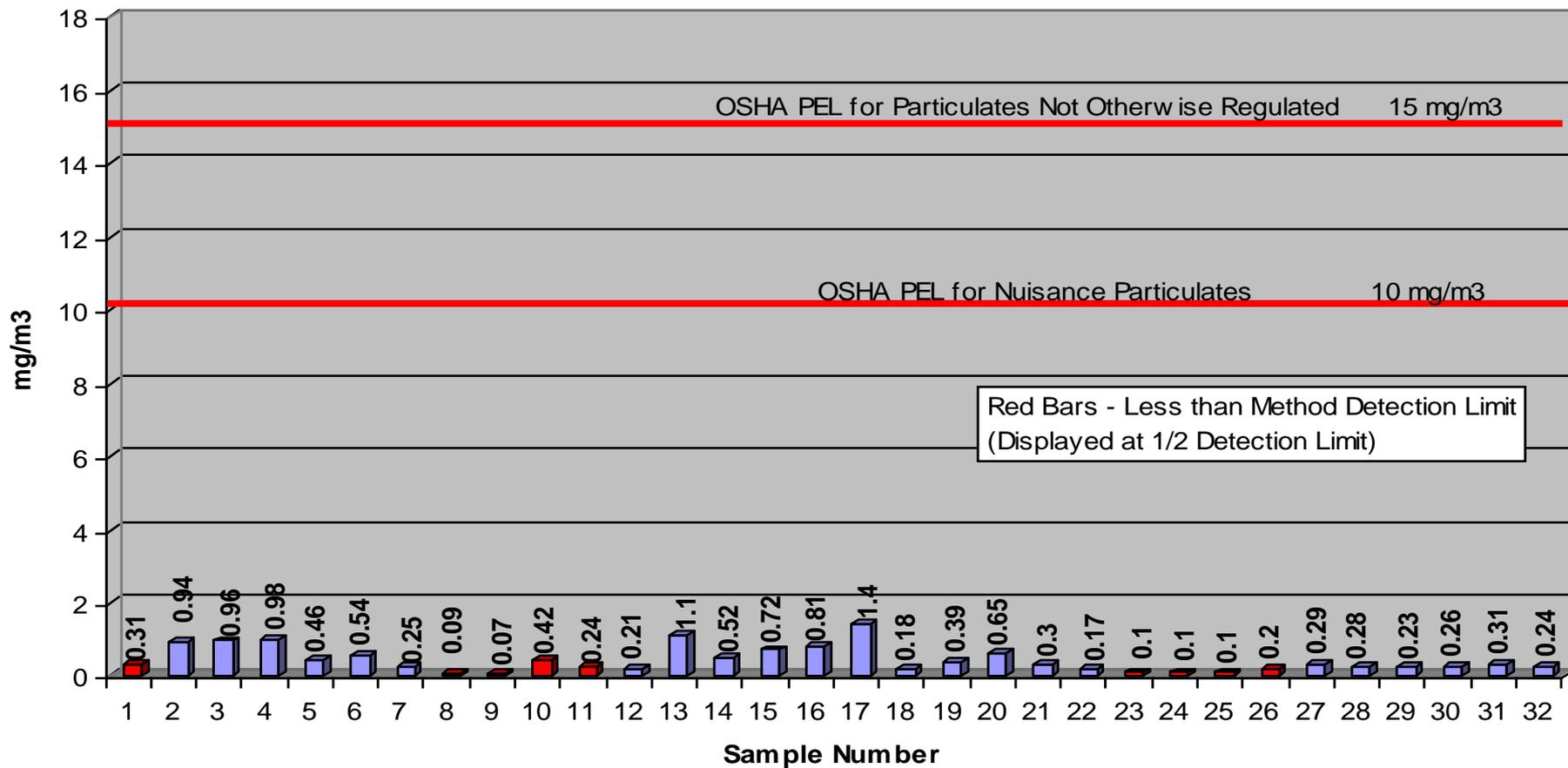
Asphalt Shingle Tear-Off Inhalation Exposure Assessment

Conclusions

- No statistically significant difference between background and rooftop Benzene Soluble Fraction (asphalt) levels measured.
 - Rooftop Total Particulate measurements were statistically greater than background Total Particulate measurements.
 - All Benzene Soluble Fraction and Total Particulate measurements were below applicable OSHA and ACGIH allowable levels.
- Best possible outcome.**

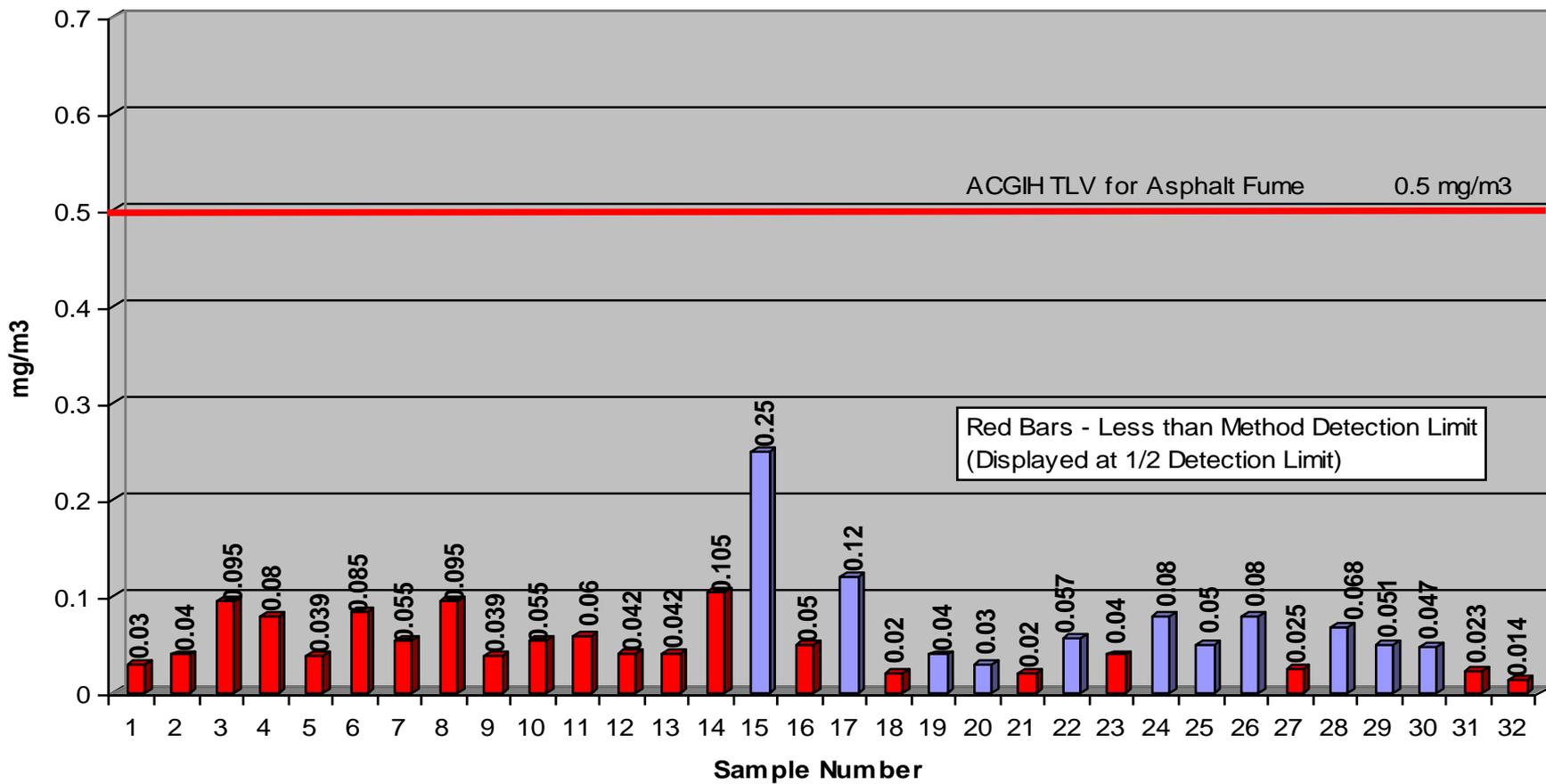


Total Particulate Matter (mg/m³) Analytical Results from Personal Samples During Tear-Off





Benzene-Soluble Fraction (mg/m³) Analytical Results from Personal Samples During Tear-Off





Asphalt Shingle Tear-Off Inhalation Exposure Assessment

- Draft publication developed by Bureau Veritas.
- Extensive re-write done by ARMA members and staff.
- Modified report has been submitted to ARMA and Asphalt Institute HSE committees for review.
- Bureau Veritas reaction to extensive modification is unknown?

→ If Bureau Veritas will not accept modifications, AREC will look into alternate publication options.



Rome Conference Summary

- Only remaining IARC data gap is completion of Initiation/Promotion study continuation of BURA mouse skin painting study.
 - API HPV related reproductive effects testing may have provided positive insight into the future results of this test.
- CONCAWE preparation for asphalt related REACH review is going well and results to date are positive.
- Paving asphalt vs roofing asphalt topic of inflammatory comments by European asphalt producer.



Rome Conference Summary

Carcinogenicity: much clearer understanding of the health impact of bitumen and bitumen fumes:

- Bitumen itself does not present a carcinogenic risk.
- Working conditions have improved significantly reducing exposure to bitumen fumes.
- Epidemiology studies have confirmed that bitumen fumes do not produce evidence of lung cancer in practice.
- Bitumen fumes (straight-run and semi-blown) were not tumorigenic in inhalation and dermal cancer hazard studies.
- Fully oxidized weak carcinogenic response; needs further research to understand the impact of irritation and the mode of tumor formation.
- It is anticipated that dermal irritation and cancer risk in humans is very low given the high doses and duration in the dermal bioassays.



Rome Conference Summary

Non-carcinogenic

- Slight, non-progressive respiratory tract irritation can occur at relatively high concentrations.



Rome Conference

What does this mean?

→ Not going to ask for additional funding related to IARC Review!!!



CONCAWE Bitumen REACh Registration

- Covers nine bitumen materials (CAS / EINECS numbers).
- Boiling point range: > 320 degrees C to more than 500 degrees C.
- Processes covered include:
 - atmospheric distillation
 - vacuum distillation
 - solvent deasphalting
 - oxidation / catalytic oxidation
 - thermal cracking
- Does not include natural asphalts e.g. TLA, Gilsonite



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CONCAWE Bitumen REACH Registration

Activities in progress:

- Preparation of application that includes:
 - Health, safety and environmental hazard assessments
 - Classification and labeling
 - PBT / vPvB assessments
 - Development of a category justification document
 - Development of Do Not Exceed Levels (DNELs) and Predicted No Effect Concentration (PNECs)
 - Exposure/emission assessment – if applicable



CONCAWE Bitumen REACH Registration

Preliminary Conclusions:

Health

- Some respiratory tract irritation
- Not an issue

Physicochemical

- Not an issue

Environmental

- Not an issue

PBT /vPvB assessment

- Not an issue



Why is CONCAWE Bitumen REACH registration important to US Roofing Manufacturers and Associates?

TSCA Reform – Import REACH approach to USA!

➔ If TSCA article definition remains the same as REACH:

- Will not effect shingles or roll goods.
- Cements and Coatings would be registered.
- Associate member supplied raw materials may have to be registered.

➔ Individual members and/or industry or industry consortium would have to develop application for REACH like authorization.



ARMA Comments on EPA Proposed GACT

ARMA had to react quickly to EPA Proposed GACT standards.

- ARMA members participate in face-to-face meeting at ARMA Headquarters in Washington, DC.
- ARMA meets with EPA regarding proposed GACT standards in Research Triangle Park, North Carolina.
- Large amount of participation, discussion, and feedback from HSE Committee.
- Comments submitted on time.



Asphalt Roofing
Manufacturers Association

ARMA Standing Committee Reports Health, Safety, and Environment Committee





ARMA Comments on EPA Proposed GACT

- Strongly supported use of particulate matter (PM) as a surrogate for polycyclic aromatic hydrocarbons (PAH).
- Emission limits were more stringent than the MACT standards for the industry and were contrary to the structure and legislative history of the Clean Air Act.
- 3-year compliance deadline rather than one year.
- Pressure drop and inlet temperature should be operating not compliance parameters. Use as compliance parameters will result in many violations with no excess emissions.
- Use a compliance approach in which a facility would be required to re-test if it exceeded an operating parameter limit more than 5% of the time during a 6-month period.
- Support use of previously conducted emission tests to demonstrate initial compliance when meeting certain conditions.



ARMA Comments on EPA Proposed GACT

- Because “normal operation” is difficult to define, should conduct initial compliance test under representative conditions and never during startup, shutdown, or malfunction.
- Compliance testing should be conducted while manufacturing the roofing product that is expected to result in the greatest amount of PM emissions.
- Supported EPA’s finding that it is unnecessary and unduly burdensome to require area sources to obtain title V permits.
- The cost of compliance with the proposed GACT standards will be much higher than EPA has predicted in the proposal. ARMA more realistic cost figures.



GACT Status

- Federal judge extended deadline to December 16, 2009.
 - EPA has stated the Asphalt Roofing GACT will be final by November 16, 2009. We will see what happens.
- ARMA will hold webinar shortly after final GACT standard is issued to discuss its impact on the industry.**



ARMA Comments on Greenhouse Gas Reporting

- Recommended raising reporting threshold from 25K to 100K metric tons CO₂e/year.
- Recommended removing “Once In, Always In Provision”.
- Strongly supported decision not to require “Third Party Verification”.
- Recommended reporting only fuel related CO₂e for thermal oxidizers.
- Recommended that, due to economic downturn, facility has option of reporting potential not actual emissions.

→ Rule final – If facility has > 25K metric tons CO₂e during 2010 has to report to EPA by April 1, 2011.



QUESTIONS?