110.

DETERMINATION OF WORKPLACE DUST EXPLOSION HAZARDS. J. Rima, U.S. DOL/OSHA, Salt Lake City, UT.

How do we, as occupational safety professionals, determine the workplace hazard presented by explosive dusts? Various attributes of a material come into play to determine if a material is potentially explosive. Considerations such as the particle size of the dust, its moisture content, the ability of the material to be oxidized, and achievable airborne dust concentration are all important. A common misconception is that the whole area under consideration must be at or above the minimum explosive concentration. A small explosion in a room with settled dust is a common scenario for a catastrophe. Methodology currently exists which permits testing of these dusts for their explosive properties. Applicable OSHA standards require different aspects of these properties to be determined. The grain handling standard cites the need to measure the amount of fugitive grain dust present. This is normally accomplished with a ruler and subsequent measurement of the [illegible] of com- [illegible] The [illegible] ndard [illegible] ne if it [illegible] ed test [illegible] supporting documents for this standard. Hazard assessment issues such as confined space, housekeeping, and dust collection systems are addressed with different test methods. Determination of rate of pressure rise is significant for these evaluations, as that information gives the best idea of the actual physical hazard present.

Acquiring information which describes the explosive properties of any workplace material present is an important step in the overall evaluation of physical hazards.

111.

FARM FAMILY TAKE-HOME PESTICIDE EXPOSURE STUDY. B. Curwin, M. Hein, NIOSH, Cincinnati, OH; W. Sanderson, University of Iowa, Iowa City, IA; S. Reynolds, Colorado State University, Fort Collins, CO; M. Nishioka, Battelle Memorial Institute, Columbus, OH; E. Ward, American Cancer Society, Atlanta, GA; M. Alavanja, National Cancer Institute, Bethesda, MD.

Twenty-five farm and 25 non-farm households in Iowa were investigated for agricultural pesticide contamination. Air, wipe, and dust samples were collected inside homes and primary family vehicles on two occasions during the spring and summer, 2001. Samples were analyzed for atrazine, metolachlor, acetochlor, alachlor, chlorpyrifos, glyphosate, and 2,4-D. Chlorpyrifos was detected most frequently in house wipe samples, followed by acetochlor, metolachlor, and atrazine. Alachlor, glyphosate, and 2,4-D were not detected inside any homes; atrazine was not detected in any farm homes; and acetochlor and metolachlor were not detected in any non-farm homes. The maximum residue found in farm homes was 25 ng/cm^2 for chlorpyrifos, 2 ng/cm^2 for acetochlor, and 9 ng/cm^2 for metolachlor. In non-farm homes, the maximum chlorpyrifos concentration was 4 ng/cm^2, and only one sample was positive for atrazine (161 ng/cm^2). Similar results were found inside the vehicles: chlorpyrifos was detected most often, followed by acetochlor, metolachlor, atrazine, and alachlor. Glyphosate and 2,4-D were not detected on the vehicle wipe samples. One hundred and eighty-five of 197 air samples (94%) were non-detectable for any pesticides. Pesticides were detected more often in the dust samples, especially in the farm homes. Chlorpyrifos, glyphosate, and 2,4-D were detected in all farm and non-farm homes. The geometric mean pesticide levels (ng/cm2) in farm and non-farm homes respectively were 0.13 and 0.02 for glyphosate, 0.19 and 0.05 for 2,4-D, 0.01 and 0.004 for chlorpyrifos, 0.004 and 0.003 for acetochlor, 0.02 and 0.002 for metolachlor, 0.01 and 0.001 for atrazine, and 0.002 and 0.001 for alachlor. Chlorpyrifos, 2,4-D, metolachlor, and atrazine were significantly different. These results indicate that pesticides can be detected in most homes, with farm homes being generally more contaminated. Dust samples appear to be a better measure for pesticides than wipe or air samples.

112.

PRODUCTIVE PARTNERSHIPS: IMPROVING PESTICIDE SAFETY IN OREGON. C. Ottoson, G. Cooke, Oregon OSHA, Salem, OR.

Pesticide use in agricultural applications remains a significant concern for the safety and well-being of farm workers. Farm worker advocacy groups have expressed their concerns to the Environmental Protection Agency (EPA) about the lack of effective enforcement of the Worker Protection Standard (WPS). In Oregon, these concerns have included limited inspections; workers not being contacted during inspections; inspections not being conducted during non-traditional business hours; central posting requirements being ignored; and minimal fines for violations. Since 1991, Oregon OSHA and the Oregon Department of Agriculture have worked together to address enforcement of occupationally-related pesticide issues, which included Oregon OSHA adopting the WPS into its agricultural safety and health rules. In 2000, Oregon OSHA developed a comprehensive plan to coordinate enforcement of agricultural rules with particular emphasis on labor housing, field sanitation, and pesticide safety. Oregon OSHA established a Pesticide Emphasis Program which focused on the WPS, Hazard Communication, and personal protective equipment. Oregon OSHA also entered into an unfunded cooperative agreement with EPA to report on pesticide-related activities related to WPS enforcement. WPS enforcement in conjunction with the state's agricultural safety and health rules placed Oregon OSHA in the unique position of providing a "one-stop" regulatory agency for the occupational aspects of pesticide safety. In a national review of regional WPS regulatory programs, EPA Region 10 examined Oregon OSHA's enforcement and outreach activities. The findings of the EPA Report entitled, "Assessment of the Worker Protection Standard Program in Oregon," are the subject of this presentation.

Podium 116. Lead

Papers 113–118

113.

THE REMOVAL OF LEADED DUST FROM HARD SURFACES. R. Lewis, K. Ong, S. Condoor, J. Batek, A. Morrisey, Saint Louis University, St. Louis, MO; J. Chen, State University of New York, Stoneybrook, NY.

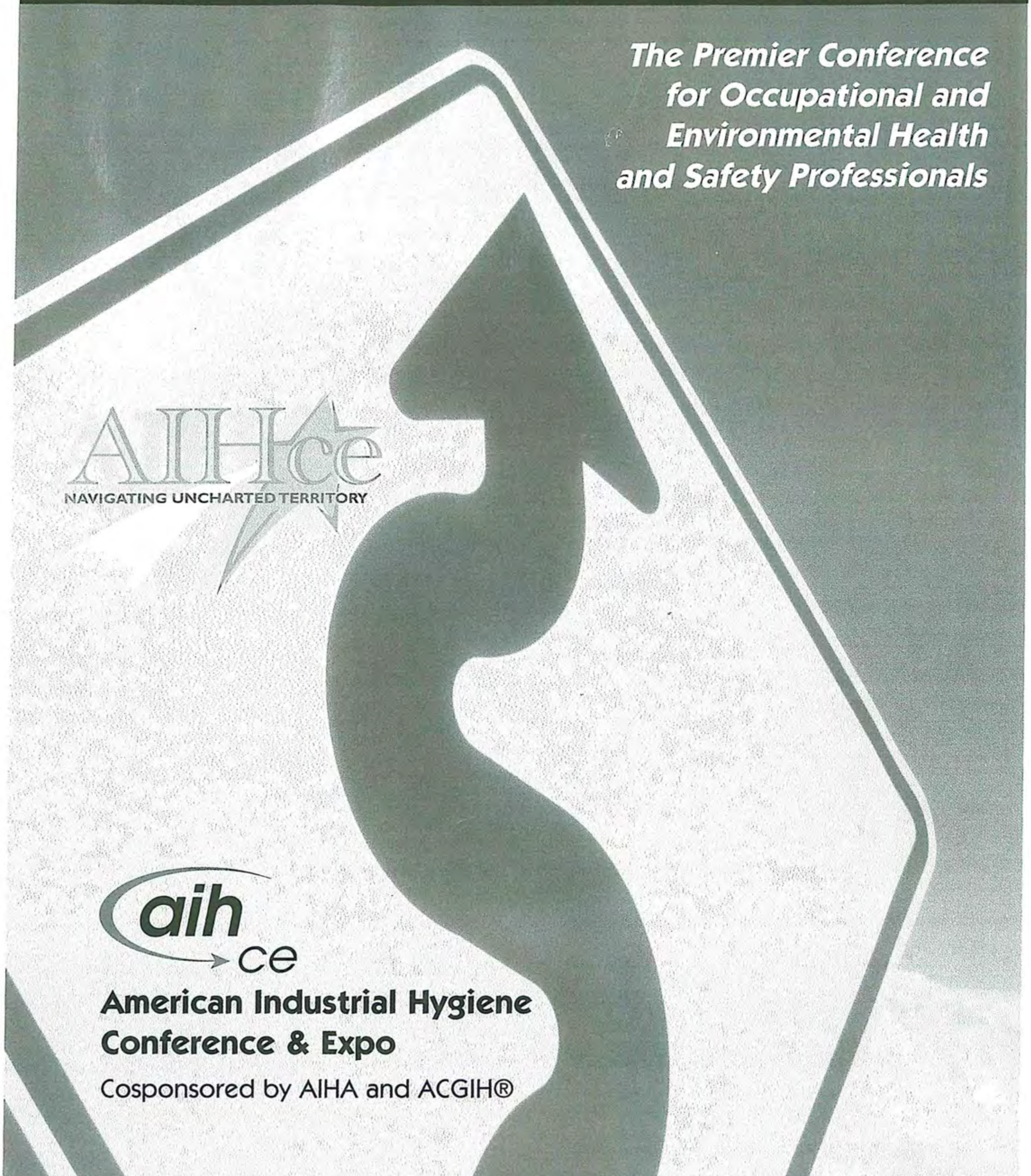
The purpose of this study was to determine if low phosphate, non-lead specific cleaners can be used to remove lead contaminated dust (LCD) from hard surfaces under varying conditions of wear and dust composition. Hypotheses were posed to evaluate lead removal by: dust particle size and source, detergent use versus industrial strength vacuuming, surface type and wear, and detergent type. Laboratory methods were developed and validated for simulating the doping, embedding, and sponge cleaning of four categories of cleaners: lead specific detergents, anionic cleaners, non-ionic cleaners, and trisodium phosphate, on vinyl, wood, and wallpaper. Linoleum and wood were worn using artificial means. Materials were ashed followed by anodic stripping voltammetry

Borderline significance was found for removal of dust based on size. A p- value of 0.095 was found for the difference between <38 μm window and < 63 μm carpet and between <38 μm window and <38 μm carpet dust. The <38 μm window dust can be removed 9% more than the same size fraction carpet dust and 17% more than the 63 μm carpet dust.

There was no significant difference between lead removal using detergent or vacuuming for wood, with both methods removing very large amounts of lead. However, wall paper or other rough surfaces are significantly more difficult to clean than a smoother wood surface. Vacuuming was found to be significantly better at removal of lead from wallpaper than detergents alone.

There was no significant difference in lead removal from wood as a percentage between the non-ionic, anionic, TSP, and lead-specific detergents. There was no significant difference in cleaning action between these detergents and water alone. However, linoleum cleaned better than wallpaper by over 14% and wood (yellow pine) cleaned better than wallpaper by 13%. There was no difference between the cleaning action of linoleum and wood.

AIHce 2003 ABSTRACTS



The Premier Conference for Occupational and Environmental Health and Safety Professionals

AIHce
NAVIGATING UNCHARTED TERRITORY

American Industrial Hygiene Conference & Expo

Cosponsored by AIHA and ACGIH®

May 10–15, 2003, Dallas Convention Center, Dallas, Texas