

714 DIETARY INTAKE OF PBDES BASED ON CONSUMPTION OF CATFISH IN SOUTHERN MISSISSIPPI.

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Polybrominated diphenyl ethers (PBDEs) are used as flame retardants in a wide variety of consumer products. Concerns surrounding these compounds are primarily due to their ubiquitous presence in the environment as well as human tissues, coupled with evidence indicating the potential for adverse effects. Despite these concerns, relatively few studies are available in the literature which characterize and quantify intake by humans. In this study, PBDE concentrations in Southern Mississippi catfish were measured in an effort to determine background levels and daily intake of these compounds from a primary food source for residents in this region of the United States. Sixty-one wild catfish samples were collected from local fisherman in March 2006 from five locations in Southern Mississippi and 28 farm-raised catfish samples were purchased from seven grocery markets. All samples were analyzed by Alta Analytical for 43 PBDEs (mono- through deca- congeners) using high resolution gas chromatography-mass spectrometry. PBDE concentrations and congener profiles varied by fish type and location. The average ΣPBDE concentration in all samples was 3.3 ng/g (wet weight); wild-caught catfish fillets had an average concentration of 3.85 ng/g whereas farm-raised catfish fillets had an average PBDE concentration of 0.45 ng/g. Using a range of consumption rates for catfish only, average PBDE concentrations, and an average body weight of 70 kg, intake values ranged from approximately 14-66 pg/kg bw for all fish types measured, 16-76 pg/kg bw for wild catfish fillets and 2-9 pg/kg bw for farm fillets. These results provide a reasonable data set describing the current background levels and daily intake of PBDEs from consumption of catfish representative of the Southeastern region of the United States. This abstract does not represent EPA policy.

715 OCCUPATIONAL EXPOSURES ASSOCIATED WITH PETROLEUM-DERIVED SOLVENTS CONTAINING TRACE LEVELS OF BENZENE.

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Benzene may be present as a trace impurity or residual component of mixed petroleum solvents due to refining processes. In this presentation, we review the physical and chemical properties of various petroleum solvents and characterize the typical airborne concentrations of benzene associated with the handling or use of low-level benzene-containing products in the United States. Our assessment was based on (1) a review of the benzene content and flammability hazard of various petroleum solvents, (2) a review and synthesis of the publicly available literature on measured airborne concentrations of benzene associated with products that have typically contained <0.1% benzene since the late 1970s or early 1980s, and (3) indoor exposure modeling to predict breathing zone 8-hr TWA airborne concentrations of benzene under several hypothetical scenarios involving the use of benzene-containing mineral spirits. Our analysis showed that petroleum-derived products that may have historically contained trace levels of benzene, such as paints and paint solvents, printing solvents and inks, cutting and honing oils, adhesives, mineral spirits and degreasers, and jet fuel could have produced average TWA airborne concentrations of benzene that ranged from 0.002 to 0.2 ppm under standard use scenarios. Higher air concentrations (up to 1 or 2 ppm benzene) have occasionally been reported for specific products, particularly if the bulk content of the product was unknown (or suspected of being greater than 1%) or the sampling was performed under "worst case" solvent use patterns or workplace conditions. The overall weight-of-evidence indicates that only certain low volatility solvents (such as mineral spirits) can be safely used in spray applications or unventilated workplace conditions, and that petroleum-based products containing <0.1% benzene are not expected to produce 8-hr TWA airborne concentrations that exceed current occupational exposure limits under nearly all anticipated product use scenarios.

716 AIRBORNE DUST EXPOSURE ASSESSMENT FOR AUTOMOTIVE BODY SHOP WORK INVOLVING RESIN FILLERS AND ABRASIVES.

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Airborne dust exposures were assessed for two body shop workers who performed routine body repair work using two different resin filler products and similar abrasive products (sandpapers and powered grinders). This pilot study compared the

composition of total and respirable atmospheric dusts associated with use of the resins and abrasive products with the composition of the original products. Observers documented the timing and nature of tasks performed, and general air flow characteristics. Personal and area samples were collected for total dust, respirable dust, total aluminum oxide and titanium dioxide, and both total and respirable talc. Scanning electron microscopy (SEM) was used to identify the physical characteristics of atmospheric dusts. A continuous dust monitor measured peak exposures from grinding, sanding, or compressed air blowing. Personal total dust concentrations ranged from 0.44 to 18 mg/m³ (background 0.1), while respirable dust ranged from 0.04 to 0.53 mg/m³. Airborne talc levels averaged 0.4% of total dust and < 1.6% of respirable dust, but comprised 10-45% by weight of the resin fillers. Titanium dioxide averaged < 0.9% of atmospheric total dust, but comprised 1-10% of the resin fillers. Airborne aluminum oxide (from abrasives) was not detected. SEM samples indicated most of the atmospheric total dust was comprised of irregular particles > 5 microns in diameter. Despite large differences in talc content between the two resin products, there was no significant difference in airborne respirable dust or talc levels during use. These findings suggest that airborne dusts generated during auto body work are largely comprised of larger particles > 5 microns, and that composition of these airborne dusts differs from the composition of the resin mixtures before curing.

717 AIRBORNE ASBESTOS MEASUREMENTS AND RISK ASSESSMENT FOR AGRICULTURAL ACTIVITIES ON AN EASEMENT WITH INSULATION DEBRIS FROM A PETROLEUM PIPELINE.

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The Arapahoe Pipeline Corridor is a 150 mile easement that contained a former petroleum pipeline spanning through agricultural and ranch lands in northeast Colorado and southwest Nebraska. The pipeline was removed for recycling but debris from the pipeline insulation comprised of chrysotile coated with tar was left in place. After the larger surface debris was removed, a study was undertaken to determine whether upper bound exposures during relevant agricultural land uses on the easement would pose appreciable cancer risk to local farmers or ranchers. A public record survey and numerous personal interviews were conducted to identify land use characteristics and activity patterns relevant to the easement. An airborne asbestos measurement study was carried out to assess potential upper bound exposures from activities that disturbed easement soils: tractor tilling of soils; harvesting with a combine; tractor mowing of grass; and driving a pick-up truck on the easement. NIOSH Method 7400 and the TEM asbestos structure counting rules of AHERA were applied for 49 air samples including personal samples of vehicle drivers and high volume area samples for each soil disturbance activity. The TEM results showed only 1 of 43 valid samples with detectable asbestos (1 chrysotile fiber, 1.4 x 0.11 microns, 0.0017 TEM f/ml). The data were validated and statistically analyzed assuming asbestos to be present at one half the detection limit for non-detects. Three upper bound agricultural exposure scenarios were formulated to simulate local farmer impacts from the easement, and the USEPA cancer potency factor of 0.23 per PCM f/ml was applied. Each 40 year exposure scenario showed upper bound cancer risks below 1 per 10 million from easement-related asbestos exposures. These findings suggest that small amounts of asbestos pipe wrap debris are unlikely to pose an appreciable inhalation cancer risk for common agricultural activities that disturb the impacted soils.

718 AIRBORNE ASBESTOS MEASUREMENTS AND RISK ASSESSMENT FOR AN ATHLETIC FIELD WITH TRANSITE BOARD DEBRIS FROM BARRICKS DEMOLITION.

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Barricks with chrysotile-containing transite board siding at a U.S. Coast Guard facility in Michigan were demolished and most of the debris removed several years before the land was donated to a city government for use as an athletic field. After the larger surface debris (> 2 sq. in.) was removed, a study was undertaken to determine whether upper bound exposures during relevant athletic field uses of this property would pose appreciable cancer risk to the athletic field users and maintenance personnel. An airborne asbestos measurement study was carried out to assess potential upper bound exposures from activities that disturbed the impacted soils: annual soil aeration, grass mowing, and use as a soccer field. NIOSH Method 7400 and the TEM asbestos structure counting rules of AHERA were applied for 56 air samples including personal samples of equipment operators/players and high volume area samples for each soil disturbance activity. The TEM results showed that