We identified those studies considered "key" by EPA, and summarized the information including both the authors' and EPA's conclusions. Further, we evaluated EPA's use of the studies in developing and supporting their proposed standard, and we evaluated the strength of a causal relationship for a number of endpoints. When we plotted hospital admissions, emergency room visits, and total mortality as a function of ozone concentration (average, 98th percentile, and 99th percentile), we found no indication of a traditional dose-response relationship, with effects increasing as dose or concentration increases, as would be expected based on basic toxicological principles. The lack of an apparent dose-response relationship casts doubt on the role that ozone exposure, particularly at concentrations <0.08 ppm, may play in hospital admission rates, emergency room visits, or total mortality. We also noted inconsistent findings and weaknesses in the mortality studies, and a lack of coherence between data for cardiovascular morbidity and mortality where mortality was elevated, but morbidity was not. Further, chamber studies provide little evidence of significant effects below 0.08 ppm. In conclusion, there is a limited scientific foundation to support a reduction in the present standard. One cannot conclude with a high degree of confidence that a reduction in the present standard will clearly provide substantial health benefits.

1463 NEUROLOGICAL SYMPTOMS AND NEUROPATHOLOGICAL ANTIBODIES IN POULTRY WORKERS EXPOSED TO *CAMPYLOBACTER JEJEUNI*.

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The pathogenic bacterium *Campylobacter jejeuni* is a major cause of food-borne illness and also frequently identified as a risk factor for Guillain Barre Syndrome (GBS), the most common cause of acute neuromuscular paralysis in the world. This association has been found in association with dietary and drinking water exposures, and has been explained in terms of molecular mimicry, in which antibodies to *C jejeuni* surface protein cross react with glycolipid proteins in peripheral nerves.Because of the endemic presence of *C jejeuni* in poultry production, we examined risks of peripheral neuropathy in poultry workers as compared to community referents using a clinical questionnaire developed for studies of GBS. We also examined sera for anti-glycolipid antibodies, a biomarker of GBS, and *C jejeuni*-specific antibodies, a biomarker of *C jejeuni* exposure. Workers were 3 times more likely to report stomach cramping symptoms ($p = 0.03$), and more likely to carry higher titers of anti- *C jejeuni* IgG antibodies ($p = 0.002$). They were also significantly more likely to report neurological symptoms consistent with GBS (4-10 times). Anti-glycolipid IgG antibodies were more common among male poultry workers as compared to male referents ($p = 0.07$). These results confirm associations between *C jejeuni* exposure and risks of peripheral neuropathy. Moreover, the findings suggest that agricultural occupational exposures, in addition to diet and drinking water, may be an unrecognized source of increased risk of this important disease. *Research approved by CHR, JHMI, and supported by the Center for a Livable Future (JHSPH), NIOSH, the Military Infectious Disease Research Program, and NIH.*

1464 EVALUATION OF POTENTIAL INHALATION HAZARDS OF PETROLEUM-, SYNTHETIC- AND BIO-FUELS USING GC/MS ANALYSIS OF VAPORS UNDER EQUILIBRIUM CONDITIONS.

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The increasing attention and evolving policies concerning future energy supplies necessitates understanding the composition of alternative fuels to characterize human exposures to these complex chemical mixtures. A comparison of headspace vapor components of several fuel types was carried out using gas chromatography and mass spectrometry. A preliminary inhalation study of aerosolized Jet Propulsion Fuel 8 (JP-8) and a synthetic Fischer-Tropsch (FT) fuel (S-8) revealed important differences in the hydrocarbon composition of the droplets and vapor phases in the chamber atmospheres. Aromatic hydrocarbons found in JP-8 were replaced with methyl branched isoparaffins and lighter hydrocarbons (C8 - C10) in FT fuel. Headspace vapor results showed a bio-fuel blend of biodiesel and a bio-oil derived from wood chips contained toluene and benzene and some components specific to wood such as Alpha pinene, 2-beta pinene, Limonene, beta-Terpinene, Camphene, 2-methyl furan, and 2,5-dimethyl furan. Such components derived from oils and polymers of plant species may lead to novel exposures compared to petroleum based diesel fuels. More research is needed to characterize the potential exposures to hydrocarbon mixtures derived by different manufacturing processes and these fuels should also undergo standardized toxicological evaluations.

1465 NITRATE TOXICITY RISK ASSESSMENT: FROM FIELD SAMPLING TO REMOTE SENSING AND BEYOND.

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Nitrate poisoning is a common and economically important problem in ruminant livestock production. Toxic nitrate accumulation in plants is linked to climatic conditions that lead to plant stress. We hypothesized that satellite-derived Normalized Difference Vegetation Index (NDVI) data can be used to predict plant stress and nitrate accumulation risk. Kansas State University Veterinary Diagnostic Laboratory forage nitrate assay records from zip code 66427 during 2001-2005 were analyzed in comparison to NDVI and precipitation data. Increased frequency of excessive nitrate accumulation events in forage plants followed declining NDVI during the summer growing seasons associated with summer drought. In addition, nitrate accumulation at 12 sample sites at the Konza Prairie Experimental Station were correlated with dry conditions in the 2007 growing season. These results suggest that risk models for nitrate poisoning in livestock can be developed based on remotely sensed environmental data such as NDVI. Such models will be free of spatial and temporal bias, and provide complete coverage of the land surface area at resolutions relevant to individual animal production units.

1466 EXAMINATION OF THE CURRENT GEOGRAPHIC RELATIONSHIP BETWEEN BLOOD LEAD LEVELS AND AIR LEAD LEVELS IN THE UNITED STATES.

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Sponsor: B. Beck.

We examined the empirical relationship between blood lead levels, lead emissions, and air lead concentrations in the U.S., in light of EPA's recent review and likely revision of the National Ambient Air Quality Standard (NAAQS) for Lead, currently set at 1.5 μg/m3. We developed maps of air lead levels, lead emissions data, and blood lead levels for the U.S. Data for the maximum quarterly average air lead levels by county for 2001 to 2006 were drawn from EPA's Air Quality System (AQS). These data show that air lead levels decreased in many locations over this time period. Lead emissions data for all facilities with lead emissions greater than 2 tons/year for 1999 and 2002 were drawn from EPA's National Emissions Inventory (NEI). These data show that point source lead emissions decreased substantially over this time frame. Blood lead surveillance data for 2005, including screening rates and case incidence rates of levels above 10 μg/dL, were drawn from the Centers for Disease Control and Prevention (CDC) Lead Poisoning Prevention Branch, by county for 34 states. We did not find a geographic correlation between the locations of elevated blood lead levels and elevated air lead levels or distance to the nearest lead-emitting facility. State blood lead screening programs were found to vary substantially in both screening rates and targeted populations, contributing to uncertainties and limitations of this analysis. There is also a paucity of air lead monitoring data near many of the facilities with lead emissions greater than 2 tons/year. Using these three sets of publicly available data, it is difficult to draw conclusions about the magnitude of the relationship between air lead levels and blood lead levels. This suggests that either the current relationship between air lead levels and blood lead levels is very weak, or that existing air lead and blood lead data are too limited to be able to determine the relationship at this time.

1467 EFFECTS OF DEMOGRAPHIC, ENVIRONMENTAL, AND POLYMORPHIC FACTORS ON EMERGENCY DEPARTMENT VISITATION IN ASTHMATIC CHILDREN.

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The purpose of this study was to find a prediction model for determining emergency department (ED) visitation for asthmatic children >18 years of age. With self reported demographics, medical history, symptomology, and polymorphic status of four detoxification enzymes as predictor inputs, multivariate binary logistic regression (BLR) and artificial neural network (ANN) modeling with bootstrapping were used to predict visits to the ED. It was hypothesized that the genetic polymorphisms and environmental exposures, such as environmental tobacco smoke (ETS),

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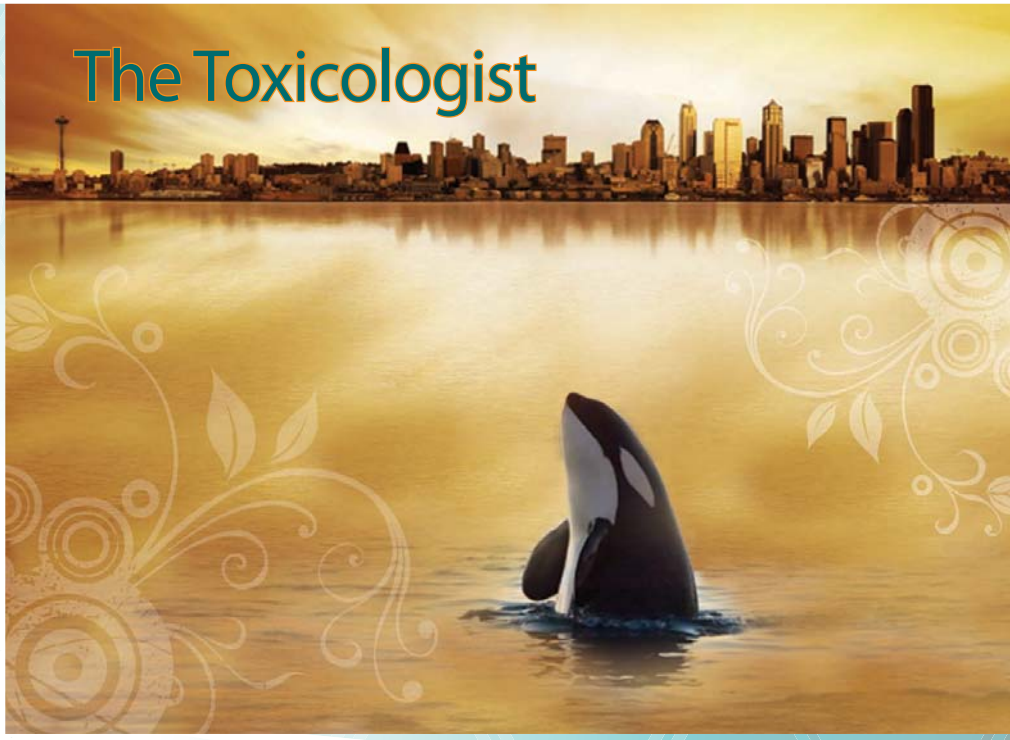

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