

urine of workers were 79.0 (range 22.6-158.9 micrograms Pb/g creatinine) and 37.3 micrograms Pb/g creatinine (range 5.1-121.0), respectively. In the control group, the mean of the urinary total lead and inorganic lead levels were 5.5 and 3.9 micrograms Pb/g creatinine, respectively. The difference between total and inorganic lead concentrations could be due to organic lead present in the urine. Porphyrin production and excretion by long-term cultures of adult rat hepatocytes and effect of lead exposure. Quintanilla-Vega B; Hernandez A; Lpez ML; Garca-Vargas G; Cebrin ME; Mendoza-Figueroa T Environmental Toxicology Section, Centro de Investigacin y Estudios Avanzados del IPN, Mexico City, Mexico. Toxicology, 102: 3, 1995 Sep 18, 275-83

Porphyryn production and excretion and the effects of lead exposure were studied in long-term cultures of adult rat hepatocytes cultured on a feeder layer of 3T3 cells after addition of 5-aminolevulinic acid. Porphyryn excretion into the culture medium showed an irregular profile during the first 10 days, with a maximum increase of 50% at day 4 and at day 10 a value similar to that of day 1. Thereafter, porphyryn excretion decreased progressively to 18% of the initial value after 4 weeks. The cellular porphyryn content, after 7 and 28 days in culture, reached values 3.8 and 2.4-fold higher than the corresponding day 1 value. The exposure to 0.5 and 2.4 microM Pb2+ for up to 28 days produced a biphasic effect on porphyryn excretion. Firstly, there was a progressive decrease up to 81% during the first 6 days of lead exposure and, secondly, this effect was followed by an increase reaching control values at day 15 and of up to 6.7-fold after 22 days of exposure to 2.4 microM Pb2+. Similar changes were observed in cellular porphyryn content. The exposure to 0.5 and 2.4 microM Pb2+ for 2 and 4 weeks also produced morphological alterations and release of cytoplasmic enzymes. Our results show that hepatocytes cultured on 3T3 cells produce and excrete porphyrins for 28 days and that exposure for 4 weeks to micromolar lead concentrations alters these functions and cell morphology and produces cytotoxic effects which are better evaluated by monitoring alterations in porphyryn excretion than by enzyme leakage. They also suggest that this culture system is a useful model for assessing the toxic effects of xenobiotics on the biosynthesis of heme by liver cells. The effect of emissions on heavy metals concentrations in cattle from the area of an industrial plant in Slovakia. Kottferov J; Koznekov B Research Institute of Experimental Veterinary Medicine, Hlinkov 1/A, Kosice, Slovak Republic. Arch Environ Contam Toxicol, 29: 3, 1995 Oct, 400-5

Attention was devoted to the effects of risk element-containing industrial emissions on the biological material of cattle bred on farms in the vicinity of a metallurgical plant in East Slovakia. The observations lasted two years and included four agricultural farms in the polluted area and one control farm outside this area. In 1991, 20, 30, 30, 30, and 30 samples of milk, muscle, liver, heart, and kidney tissue were analyzed, whereas in 1992, 30, 48, 48, 48, and 48 respective samples were taken. For Cu, Zn, Mn, Cd, Pb, and Ni analyses, the AAS method was employed, using the UNICAM 939 device, while Hg residues were determined on the TMA 254 analyzer. In 1991, of a total of 120 samples of tissue and organs, 12.5%, 9.16% and 0.8% were found to contain above-limit levels of Cd, Ni, and Cu, respectively. The concentrations of the remaining elements, viz., Zn, Mn, Pb, and Hg, did not surpass the permitted maxima. In 1992, 1.03%, 2.60%, 0.51%, and 5.20% of 192 samples of tissue and organs contained above-limit Cd, Cu, Ni, and Zn levels. Mortality and cancer incidence among secondary lead smelter workers. Gerhardsson L; Hagmar L; Rylander L; Skerfving S  " - < 0 0 +D "

Address Department of Occupational and Environmental Medicine, University Hospital, Lund, Sweden. Occup Environ Med, 52: 10, 1995 Oct, 667-72

OBJECTIVES--To examine the mortality pattern and the cancer incidence in a cohort of long term smelter workers exposed to lead. METHODS--The cohort consists of 664 male lead battery workers, employed for at least three months in 1942-87. From 1969 the values of all blood lead samples repeatedly obtained from these workers every two to three months, have been collected in a database. The expected mortality and morbidity 1969-89 was estimated from the county rates, specified for cause, sex, five-year age groups, and calendar year. Individual exposure matrices have been calculated and used for dose-response analyses. RESULTS--The total cohort showed an increased overall mortality (standardised mortality ratio (SMR) 1.44; 95% confidence interval (95% CI) 1.16-1.79), an increased mortality from ischaemic heart diseases (SMR 1.72; 95% CI 1.20-2.42) and all malignant neoplasms (SMR 1.65; 95% CI 1.09-2.44). These risk estimates were unaffected or slightly decreased when applying a latency period of 15 years, and no dose-response pattern was shown. The non-significantly raised cancer incidence in the gastrointestinal tract (11 malignancies) in the total cohort, increased to a barely significant level in the quartile with the highest cumulative lead exposure (standardised incidence ratio (SIR) 2.34, 95% CI 1.07-4.45). No clear dose response pattern was evident when further subdividing the data into those first employed up to 1969 v those first employed after 1969 when the blood lead monitoring programme started. The risk estimate for malignancies in the gastrointestinal tract was not related to latency time. The cancer incidence was not increased at other sites. CONCLUSIONS--A slightly increased incidence of gastrointestinal cancers was found in workers exposed to lead and employed before 1970. The lead cohort also showed an increased mortality from ischaemic heart diseases. These risk estimates did not show a dose-response pattern and were not associated with latency time. The results must also be interpreted with caution because of limited numbers, and lack of dietary and smoking data. Effect of early lead exposure on children's postural balance. Bhattacharya A; Shukla R; Dietrich K; Bornschein R; Berger O Department of Environmental Health, University of Cincinnati Medical School, Cincinnati, OH 45267-0056, USA. Dev Med Child Neurol, 37: 10, 1995 Oct, 861-78

This study investigated the effect of chronic exposure to lead on children's ability to maintain upright postural balance as a biological marker of lead-induced modifications of the neuromotor system. For this study, 162 six-year-old children, with a five-year geometric mean lead concentration in blood of 11.9 micrograms/dL (range 4.0-28.0 micrograms/dL), were tested for postural balance with a microprocessor-based force platform system. An increase in blood lead was significantly associated with an increase in the variable postural sway--implying poorer postural balance. This association was not influenced by socio-economic, racial or environmental factors. This simple, objective and quick technique may be useful for assessing gross motor functions in children who are at or below the United States Centers for Disease Control's class III category and/or for monitoring the effectiveness of medical interventions aimed at reversing lead-associated impairment of upright postural balance. A comparative study of cadmium, lead, zinc, pH, and bulk density from the Enyigba lead and zinc mine in two different seasons. Chukwuma C Sr Department of Limnology and Environmental Protection, Faculty of Agriculture and Forestry, University of Helsinki, Finland. Ecotoxicol Environ Saf, 31: 3, 1995 Aug, 246-9  " -

000460

Abstract Soil pH and bulk density, as well as the concentrations of cadmium (Cd), lead (Pb), and zinc (Zn) in soils and these metal levels in the leaves of cassava (*Manihot esculenta*) and rice (*Oryza sativa*), both collected, respectively, in the dry season (December) of 1991 and the rainy season (September) of 1992 from the Enyigba lead and zinc mine, Nigeria, were investigated. Interspecific variations in trace element levels in the plant leaves were detected and may reflect the predilection of these plants to particular elements rather than their variability being due to different climatic conditions, such as precipitation, or other environmental factors. Shaping environmental research: the Lead Industries Association 1928-1946. Wedeen RP Veterans Affairs Medical Center, East Orange, NJ 07018-1095, USA. Mt Sinai J Med, 62: 5, 1995 Oct, 386-9 Abstract not available online. Measurements of environmental lead contamination and human exposure. Flegal AR; Smith DR WIGS, University of California, Santa Cruz 95064, USA. Rev Environ Contam Toxicol, 143:1995, 1-45 The importance of accurate measurements of environmental lead exposure and toxicity is substantiated by analyses documenting the global contamination of the biosphere with industrial lead and the pervasiveness of measurable lead toxicity in human populations. Those data demonstrating environmental lead contamination and toxicity have, in part, led to regulations that limit the amount of lead in some products (e.g., paint, solder, and gasolines) in many industrialized countries. These regulations have resulted in a substantial reduction in some lead discharges to the environment. In spite of these reductions, current environmental lead levels are still often more than 10-fold, and sometimes more than 10,000-fold, higher than natural levels. Further, environmental lead concentrations are expected to remain elevated for a protracted period due to continued emissions of relatively large amounts of industrial lead to the environment and the persistence of contaminant lead in the environment. Discharges of contaminant lead have resulted in increases in organism and human lead levels comparable to increases documented in environmental matrices, as indicated by a recent estimate of the natural level of lead in blood of preindustrial humans (0.016 microgram/dL or 0.8 nM). This estimate is 175-fold lower than average blood lead levels in the United States (2.8 micrograms/dL or 140 nM) and 600-fold lower than the recently (1991) revised Centers for Disease Control (CDC) action level of concern for early toxic effects in children (10 micrograms/dL or 480 nM). The significance of these comparisons to public health is corroborated by numerous studies suggesting that there may be no lower threshold for sublethal toxicity in contemporary (i.e., lead-contaminated) humans. Those data also indicate that environmental lead concentrations that were previously considered innocuous may be deleterious to human health. It is apparent that the extent of sublethal lead toxicity in humans may be best addressed by studies that consider control populations possessing natural (i.e., preindustrial) lead burdens, as well as state-of-the-art, trace-metal-clean techniques and advanced instrumentation. Trace-metal-clean techniques are required to prevent the inadvertent lead contamination of samples, which has plagued many previous analyses of environmental and human lead levels. Advanced instrumentation is required to provide the sensitivity, accuracy, and precision that are needed to quantify the sublethal effects of lead concentrations at environmental levels of exposure. Fortunately, methodologies utilizing these advancements are now capable of addressing many of the important issues (e.g., lead biomolecular speciation, low exposure effects) in environmental and human

lead toxicology. Exposure of children to pollutants in house dust and indoor air. Roberts JW; Dickey P Engineering Plus Inc., Seattle, WA 98112, USA. Source Rev Environ Contam Toxicol, 143:1995, 59-78 This review summarizes occurrence and exposure studies for pollutants in house dust and related indoor air exposures. A standard sampling method and control methods to reduce these exposures are discussed, including recommendations for future research. Infants and toddlers receive a broad and significant range of exposures to lead, pesticides, PAHs, allergens, and VOCs in house dust and indoor air. Carpet dust in eight Columbus and nine Seattle homes contained concentrations of potentially carcinogenic PAHs ranging from 3 to 290 micrograms/g, of lead from 250 to 2250 micrograms/g, and of PCBs from 210 to 1900 ng/g. Dust collected from ten used sofas in Seattle averaged 16.3, 37.2, and 229 micrograms/g for dust mite allergen, cat allergen, and lead, respectively; dust samples showed mutagenic activity. Biological and chemical pollutants in indoor dust and air have been associated with lead poisoning, cancer, allergy, asthma, damage to the nervous system, and sick building symptoms. The 11% of toddlers who have pica tend to have the highest exposures and risks. Further, the exposure of toddlers to lead via the dust pathway can be greater than by other routes. Standard method ASTM 5438.94 for sampling house dust has been used to characterize current and chronic exposure of toddlers in epidemiological studies. The accumulation of dust, dust mites, and tracked-in soil in old carpets, sofas, and mattresses appears to be a major source of exposure to lead, pesticides, allergens, PAHs, and VOCs. Remodeling and energy conservation can reduce ventilation and increase relative humidity, dust, dust mites, molds, VOCs, and other indoor air pollutants. The U.S. faces large and increasing costs from asthma and allergy. Asthma incidence in the U.S. has increased from 0.5% in 1930 to 8%-12% in 1991. Asthma hospitalization rates for children are increasing at the rate of 4%/yr in the U.S. and 14%/yr in Seattle. Such hospital visits would be rare with effective diagnosis, patient education, and control of home exposures. Asthma was estimated to cost \$6.2 billion in 1990; hospital visits of children in Seattle cost \$2,526,000 in 1993. Forty percent of the U.S. population has been sensitized to allergens; one in three homes has high relative humidity, which favors dust mites, molds, allergies, asthma, and other respiratory diseases. Reducing indoor allergens can reduce costs, severity, and the risk of being sensitized and developing allergic disease. Use of volunteer Master Home Environmentalists to do free in-home surveys and education in Seattle may reduce immediate health costs from allergens as well as long-term risks from lead, carcinogens, and home chemicals. (ABSTRACT TRUNCATED AT 400 WORDS) [Screening for lead poisoning in children by measuring lead levels in housing: a study of the Paris region] Title DA) Apistage du saturnisme infantile A! A partir de la recherche de plomb dans l'habitat: une A! A tude en rA) Agion parisienne. Ginot L; Peyr C; Fontaine A; Cheymol J; Buisson B; Bellia G; Da Cruz F; Buisson J Service Communal d'HygiA/ Ane et de SantA) A, Aubervilliers. Rev Epidemiol Sante Publique, 43: 5, 1995, 477-84 Screening programs for lead poisoning in France rely usually on the preliminary identification of risk factors among children seen in Maternal and Child Health (MCH) clinics. To assess the potential relevance of screening strategies based on the quantification of exposure to lead in housing, we estimated first the prevalence of exposure to lead in a representative sample of older buildings, then the prevalence of lead poisoning among children living in those buildings where high levels of lead had been found.

000461

Exposure to lead was measured in dust and paint samples collected in hallways and other collective areas of the buildings. Venous blood samples were collected from the children aged 10 months to 6 years residing in buildings where lead exceeded 1.5 g/kg in paint samples or 1000 micrograms/m² in dust samples. Paint and dust samples were collected in 137 buildings: 74% presented high dust and/or paint lead contents. Blood samples were collected from 145 out of a total of 189 children residing in these buildings: blood lead levels (PbB) were higher than or equal to 10 micrograms/dl for 65% of these children; 29% were higher than or equal to 15 micrograms/dl, 16% higher than or equal to 20 micrograms/dl. Out of 42 children with PbB > or = 15 micrograms/dl, 21 had not been previously identified through the screening program conducted in local MCH clinics. Clinic-based and environment-based screening appeared to be complementary. It seems thus justified to develop screening strategies based on the assessment of exposure to lead in the environment.

Ø " - <.<.<Ø Ø à+Ð " ØETitle [Evaluation of decontamination interventions in 59 homes of children with lead poisoning] Title Evaluation des travaux de dÅ) Åcontamination de 59 logements d'enfants atteints de saturnisme. Nedellec V; Fontaine A; Luciulli E; Bourdillon F MÅ) Ådicins Sans FrontiÅ) Åres, Paris. Rev Epidemiol Sante Publique, 43: 5, 1995, 485-93

Old peeling paint with high content of lead has been identified as the main source of lead poisoning for children screened in Paris since 1985. In 1989, MÅ) Ådecins Sans FrontiÅ) Åres and Migration SantÅ) Å tested abatement methods in 59 homes of severely lead-poisoned children. The effectiveness of abatement is evaluated with respect to the evolution in dust lead contents and of the children's blood lead levels. Lead content was measured in dust samples collected from the floor of the homes before abatement, then every three months after abatement; results are available for 24 homes. Blood lead levels were assessed in the course of the children's medical follow-up; results are available before and after abatement for 78 children living in 41 of the abated homes. The effect of abatement on the children's blood lead level was assessed through multivariate analysis. The median decrease in dust lead contents was 365 micrograms/m² one to two months after abatement and 300 micrograms/m² three to six months after abatement. However, dust lead contents of more than 1,000 micrograms/m² were found in more than half of the communal areas of the buildings six to twenty-eight months after abatement. For 2 of the families, abatement was associated with an increase in the children's blood lead-levels. For all of the other children, abatement was associated with a significant decrease in blood lead levels, controlling for the child's age and initial lead poisoning level, and for the overall downward trend in blood lead levels over time since the initial screening. (ABSTRACT TRUNCATED AT 250 WORDS) [Effectiveness of blood-testis and blood-epididymis barriers for lead] Title Efektywnosc barrier: krew-jadro i krew-najadrze dla ołowiu. Marchlewicz M Katedry i Zakladu Histologii i Embriologii Pomorskiej Akademii Medycznej. Ann Acad Med Stetin, 40:1994, 37-51

Over the period of the last 30 years there was a marked decrease in the number of spermatozoa produced by the gonads of men. It is felt that this observation is due to the influence of environmental pollution, wherein the lead plays quite an important role. In sperms of men, who are professionally exposed to lead compounds, oligo-, asteno-, and teratospermia is disclosed. Studies were performed on sexually mature male rats after 9-month-long exposure to lead acetate (II) as well as a group of animals after 3-month-long interval in the exposure. The changes provoked by the lead were

evaluated by employing a number of study techniques, namely: morphological examination of testes with taking into account the stages of seminiferous epithelial cycle, and epididymis, giving due consideration to zones; electron microscopic examination of seminiferous cells and interstitial tissue, as well as the cells in the wall of epididymis and spermatozoa; X-ray microanalysis determining the presence and type of elements on ultrathin section; spectrophotometrical determination of Pb content in blood, testes and epididymides; determination of testosterone concentration (T) in blood serum. It has been revealed that the blood-testis barrier protects seminiferous epithelium against the toxic action of the lead. No deposits of Pb were observed either in germinal cells or Sertoli cells. The endocrine testicular cells outside the barrier had also unchanged ultrastructure, and contained no Pb. That finding was expressed by normal T level in blood serum. The only cells in the area of the testis, in whose cytoplasm there was Pb confirmed by X-ray microanalysis, were macrophages in the interstitial tissue.

<.<.<Ø Ø à+Ð " ØE tissue of the testis. Apart from that, it has been disclosed that the blood-epididymis barrier does not provide a barrier against this element. Pb deposits were seen in smooth myocytes, epithelial cells and in the lumen of epididymal duct. That correlated with a marked decrease in the number of epididymal spermatozoa and numerous damages involving their ultrastructure. It has been shown that the lead, when passing to the duct lumen of epididymis through cells and structures constructing the wall of that organ, is being excreted from the male genital system with the sperm.

of Publication Polish [Morphological and hormonal evaluation of the influence of sulphuride on the rat's testis and epididymis] Title Morfologiczna i hormonalna ocena wplywu sulpirydu na jadro i najadrze szczura. RÅ) Åzewicka L; Marchlewicz M; Mikulska D; Piasecka M; Dominiak B Katedry i Zakladu Histologii i Embriologii, PAM w Szczecinie. Psychiatr Pol, 27: 2, 1993 Mar-Apr, 189-98

Abstract not available online. of Publication Polish Effect of long-term exposure to lead on testis and epididymis in rats. Marchlewicz M; Protasowicki M; RÅ) Åzewicka L; Piasecka M; Laszczynska M Department of Histology and Embryology, Pomeranian Medical Academy, Szczecin, Poland. Folia Histochem Cytobiol, 31: 2, 1993, 55-62

The relation was studied between the morphology of tests and epididymides on the one hand, and the lead content in these organs on the other. The testes of rats, which for the time of 5 spermatogeneses (9 months) were drinking 1% lead acetate (II), displayed all generations and layers of spermatogenic cells at respective stages of the seminiferous epithelium cycle. The lead content in testes of the animals did not differ significantly from the value of this element in gonads of control rats. The epididymal cells also failed to show morphological changes however, in all epididymal zones there were fewer spermatozoa than in the corresponding zones in control rats. Many spermatozoa revealed abnormal reactions of oxidoreductive enzymes in the midpiece. There were also local defects in tetrazolium salt reduction and segmental or total lack of formazan deposits in the mitochondrial sheath. The lead content in epididymides of these animals was significantly higher than in epididymides of control rats. The obtained results of the studies highlight the possibility for lead to accumulate in epididymis, and for lead compounds to damage spermatozoa in this organ.

of Publication English Electron-dense deposits in epididymal cells of rats chronically treated with lead acetate [Pb(II)] Piasecka M; RÅ) Åzewicka L; Laszczynska M; Marchlewicz M Department of Histology and Embryology, Pomeranian Medical Academy, Szczecin,

000462

Poland. Folia Histochem Cytobiol, 33: 2, 1995, 89-94 Electron microscopic studies were performed to investigate the influence of chronic lead acetate treatment on morphology of rat epididymis. Dense, lead-loaded inclusions were found in the cytoplasm of epididymal principal cells, especially in the caput of epididymis. They were also present, but in smaller amounts, in smooth muscle cells. Usually, the inclusions were located in vacuoles, rarely without any surrounding membrane. Similar lead-containing structures were found in the epididymal lumen. The localization of lead deposits suggests the ability of lead to pass from blood vessels through the epithelial cells of the epididymis to its lumen. It can be therefore postulated, that lead can be eliminated from the male genital tract together with ejaculate. of Publication English 0 " - <.<.<0 0 à+D " 0G"Title Red deer antlers as biomonitors for lead contamination. Tataruch F Institute of Wildlife Research and Ecology, Veterinary University Vienna, Wien, Austria. Bull Environ Contam Toxicol, 55: 3, 1995 Sep, 332-7 Abstract not available online. Paint as another possible source of lead exposure in Saudi Arabia. al-Saleh I; Coate L Biological and Medical Research Department (MBC-03), King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia. Source Bull Environ Contam Toxicol, 55: 3, 1995 Sep, 347-50 Abstract not available online. Heavy metal concentrations in great blue heron fecal castings in Washington State: a technique for monitoring regional and global trends in environmental contaminants. Fitzner RE; Gray RH; Hinds WT Battelle, Pacific Northwest Laboratory, Richland, Washington 99352, USA. Bull Environ Contam Toxicol, 55: 3, 1995 Sep, 398-403 Abstract not available online. Stable isotopes of lead for source identification. Rabinowitz MB Harvard Medical School and Marine Biological Laboratory, Woods Hole, Massachusetts 02543, USA. J Toxicol Clin Toxicol, 33: 6, 1995, 649-55 Lead is unique among all the metals in having variations among mining districts in the relative abundances of its stable (non-radioactive) isotopes. Since first described in 1927, many applications have been reported, mostly for geological uses. More recently archeological, environmental, bio-kinetic and public health uses have been found. The abundances of the four stable isotopes are usually determined with specialized mass spectrometry using rapid mass scanning cycles or multiple collectors. The relative abundances are commonly expressed as 206/204, 206/207, and 206/208 atomic ratios. Precision of 0.5% for 206/204 and even better (0.03%) for the other pairs are obtainable. The three ratios co-vary strongly and depend on when the ore was formed. This provides a tracer for following a particular batch of lead, since the ratio can only change when the lead is mixed with a different lead. A major limitation of this method is that it is useful only to those problems where the potential sources are isotopically distinct and few in number. The covariance of the ratios usually allows for only two sources to be considered. Potential sources can often be ruled out. Stable isotope identification of lead sources in preschool children--the Omaha Study. Angle CR; Manton WI; Stanek KL University of Nebraska Medical Center, Omaha 68198-6055, USA. J Toxicol Clin Toxicol, 33: 6, 1995, 657-62 The objective was to determine, from analysis of the naturally occurring stable isotopes of lead, the relative contribution of food, handdust, housedust, soil and air lead to the absorbed (urinary) lead and the blood lead of children living in a former smelter city. A longitudinal 12 month study was conducted of 21 children, 2 - 3 years of age, living in central Omaha, balanced for race, gender and socioeconomic status. Field clean samples were collected monthly of 24 hour duplicate diet,

handwipe and urine, with quarterly blood lead, annual environmental 0 " - - <.<.<0 0 à+D " 0G lead, weekly air for total lead and 206Pb, 207Pb and 208Pb by thermal ionization/mass spectrometry with a 205Pb spike in a Class II laboratory. Despite residence in a smelter city each child had a unique isotopic ratio of handwipe, blood and urine lead, the latter being identical. There was no correlation of handwipe isotopic ratio with proximity to a lead emission source or to the decade of the housing stock. The isotopic ratio of the annual mean handwipe lead predicted 43% of the variance of the annual mean blood and urine lead ratio ($r^2 = .43$; $p = .001$). Handwipe lead ratios correlated ($p < .05$) with those of the windowsills and air ducts. The mean isotopic ratios of blood and urine lead were lower than those of handwipe and food, consistent with a contribution by endogenous bone lead. Clean catch urine provides a noninvasive index of blood lead isotopic ratio in children, as in adults. Can household pets be used as reliable monitors of lead exposure to humans? Berry PJ; CÅ- ÅtÅ) Å LM; Buck WB Centre National d'Informations Toxicologiques VÅ) ÅtÅ) Årinaires, Ecole Nationale VÅ) ÅtÅ) Årinaire de Lyon, Marcy l'Etoile, France. Sci Total Environ, 172: 2-3, 1995 Nov 30, 163-73 We investigated the validity of dogs and cats as sentinels of environmental lead exposure to humans. This paper reports findings from a study conducted in Granite City, IL, during the summer of 1991. At this site, a former secondary lead smelter had been in activity for more than 80 years. The smelter was shut down in 1982. The surrounding area was found to be contaminated with lead, with soil lead concentrations above 5000 ppm in some places. The Illinois Department of Public Health conducted a survey in the community to determine the effects of lead on the local population. We sampled dogs and cats owned by these people. Our results suggest that living near a closed lead smelter, with heavy soil contamination, was not associated with high blood lead concentrations in pets, or their owners. There was a significant relationship between BLC (blood lead concentrations), in indoor pets and younger children, which was consistent with our hypothesis that pets could be used to monitor childhood lead exposure. We also found that, when there was one pet with a high BLC in a house, the likelihood of finding one person with a BLC above 10 micrograms/dl was significantly increased. Neuro-behavioral effects of childhood lead exposure. vonKoss Krowchuk H School of Nursing, University of North Carolina at Greensboro, USA. Annu Rev Nurs Res, 13:1995, 87-114 Abstract not available online. A longitudinal study of chronic lead exposure and physical growth in Boston children. Kim R; Hu H; Rotnitzky A; Bellinger D; Needleman H Department of Environmental Health, Harvard School of Public Health, Boston, MA 02115, USA. Environ Health Perspect, 103: 10, 1995 Oct, 952-7 We investigated the cross-sectional and longitudinal relationships between chronic exposure to lead and physical growth among a cohort of children reassessed 13 years after initial examination. We measured weight, height, and dentin lead levels of 270 children in 1975-78. In 1989-1990 we reexamined 79 of these children for measurement of weight, height, and bone lead levels by means of in vivo K X-ray fluorescence. To avoid potential confounding by race and chelation history, analysis was restricted to white subjects without a history of lead chelation therapy. A total of 236 subjects provided complete information for the study of cross-sectional relationship between dentin lead levels and changes in physical growth: 58 subjects for the study of longitudinal relationship between dentin lead levels and changes in physical growth and 54 subjects for the study of longitudinal

000463

relationship between bone lead levels and changes in physical growth. Dentin lead levels averaged 14.9 micrograms/g; tibia and patella lead levels 0.4 and 0.8 micrograms/g, respectively. With control for potential confounders including age, sex, baseline body size, and mother's socioeconomic status, log₁₀ dentin lead level was positively associated with body mass index as of 1975-1978 (beta = 1.02, p = 0.03) and increase in body mass index between 1975-78 and 1989-90 (beta = 2.65, p = 0.03). Bone lead levels were not significantly associated with physical growth. This is the first study relating chronic lead exposure to body mass index. The results suggest that chronic lead exposure in childhood may result in obesity that persists into adulthood. The delta-aminolaevulinic acid level as an indication of lead contamination in school children. Swies Z; Borzecki Z; Wilgat E; Grabek M; Ostapczuk J. *Katedra i Zaklad Higieny, Akademia Medyczna w Lublinie*. Ann Univ Mariae Curie Sklodowska [Med], 48:1993, 149-52. Abstract not available online. Morphological and histochemical research into the influence of the continuous administration of lead acetate on the microstructure of the male gonad in the white rat. Sierocinska-Sawa J; Wozniak F. *Katedra i Zaklad Patomorfologii, Akademia Medyczna w Lublinie*. Ann Univ Mariae Curie Sklodowska [Med], 48:1993, 43-9. Abstract not available online.

Total suspended particulate matter concentrations in Zagreb during the 1975-1993 period. Segal K; Hrsak J. *Institute for Medical Research and Occupational Health, Zagreb, Croatia*. Arh Hig Rada Toksikol, 46: 2, 1995 Jun, 217-24. Daily average mass concentrations of total suspended particulate matter were measured at three sampling sites in Zagreb, and evaluated for the period April 1975-March 1993. Each sampling site represented a different town area (residential, business and administrative, industrial) with different traffic density and type of emergent used for space heating. The time trends of concentration levels could, to a certain extent, be attributed to traffic flow modification in the vicinity of the sampling sites, introduction of natural gas in dwellings and degree of energy consumption influenced by the standard of living. Periodograms show a well pronounced seasonal dependence of total suspended particulate matter concentrations, with high concentrations during winters. Analysis of the results in respect to the European Community air quality limits (1) and the levels of other pollutants (SO₂ and smoke) leads to the conclusion that particulates being a persistent permanent problem have become a major issue concerning ambient air pollution in Zagreb. Monitoring of personal exposure to air pollutants. Subjects' experience. Fugas M. *Institute for Medical Research and Occupational Health, Zagreb, Croatia*. Arh Hig Rada Toksikol, 46: 2, 1995 Jun, 237-41. Seventeen volunteers, employees of a scientific institute, were involved in the monitoring of personal exposure to lead and cadmium in the ambient air. Thirteen of them answered a questionnaire concerning own behavior and difficulties encountered while wearing a personal sampler. Most subjects admitted that wearing the sampler and especially the noise produced by the pump made them avoid certain activities. This confirms our earlier observations that the application of personal samplers for surveying exposure of the general population might be not only costly but also tedious and unreliable. Therefore modelling based on pollutant concentrations and time spent in basic microenvironments is recommended for assessing human exposure of large population groups along with personal monitoring of a limited group of reliable subjects to validate the model. Substantial decrease of blood lead in Swedish children, 1978-94, associated with

petrol lead. Ström Å; Åberg U; Schäfer A; Skerfving S. *Department of Occupational and Environmental Medicine, University Hospital, Lund, Sweden*. Occup Environ Med, 52: 11, 1995 Nov, 764-9. OBJECTIVES--To study the potential impact of environmental exposure to petrol lead, residential area, age, sex, and lead exposing hobby, on blood lead concentrations (BPb) in children. METHODS--In the south of Sweden, yearly from 1978-94, BPb was measured in 1230 boys and 1211 girls, aged between 3 and 19 (median 10; quartiles 9 and 12) years. RESULTS--For the samples of 1978, the geometric mean (GM) was 67 (range 30-250) micrograms/l in boys and 53 (18-161) micrograms/l in girls, whereas the corresponding GMs for 1994 were 27 (12-122) and 23 (12-97) micrograms/l. The sex difference was present only in children over eight. Moreover, residential area affected BPb; in particular, children living near a smelter area had raised BPbs. There was a clear ecological relation between BPb (adjusted GM) and annual lead quantity in petrol sold in Sweden, which was estimated to be 1637 tonnes in 1976 and 133 tonnes in 1993 (P < 0.001, ecological linear regression analysis, where a two year lag of petrol lead was applied). In the 171 boys and 165 girls who were sampled twice with an interval of one to four years, the decreases in BPb were estimated to be 6% (95% confidence interval 4%-8%) and 10% (8%-13%)/year, respectively. CONCLUSIONS--The present report points out the considerable beneficial effect of the gradual banning of petrol lead on the lead exposure affecting the population and differential sex specific BPb patterns due to a pronounced age effect in girls, which may be caused by older girls' lower food intake per kg of body weight, lower lung ventilation, cleaner life style, and loss of blood lead through menstrual bleedings. Health effects of outdoor air pollution. Committee of the Environmental and Occupational Health Assembly of the O... S X

000464

Respir Crit Care Med, 153: 1, 1996 Jan, 3-50
Particles, SOx, and acid aerosols are a complex group of distinct pollutants that have common sources and usually covary in concentration. During the past two decades, the chemical characteristics and the geographic distribution of sulfur oxide and particulate pollution have been altered by control strategies, specifically taller stacks for power plants, put in place in response to air pollution regulations adopted in the early 1970s. While the increasing stack heights have lowered local ambient levels, the residence time of SOx and particles in the air have been increased, thereby promoting transformation to various particulate sulfate compounds, including acidic sulfates. These sulfate particles constitute a large fraction of the total mass of smaller particles (< 3 microns in aerodynamic diameter). Epidemiologic studies have consistently provided evidence of adverse health effects of these air pollutants. Particulate and SO2 pollution were strongly implicated in the acute morbidity and mortality associated with the severe pollution episodes in Donora (Pennsylvania), London, and New York in the 1940s, 1950s, and 1960s. There is new evidence that even current ambient levels of PM10 (30 to 150 micrograms/m3) are associated with increases in daily cardiorespiratory mortality and in total mortality, excluding accidental and suicide deaths. These associations have been shown in many different communities, as widely different in particle composition and climate as Philadelphia, St. Louis, Utah Valley, and Santa Clara County, California. It has recently been shown in a long-term prospective study of adults in the United States that chronic levels of higher PM10 pollution are associated with increased mortality after adjusting for several individual risk factors. Daily fluctuations in PM10 levels have also been shown to be related to acute respiratory hospital admissions in children, to school and kindergarten absences, to decrements in peak flow rates in normal children, and to increased medication use in children and adults with asthma. Although some epidemiologic studies suggest that acid aerosols are an important toxic component of PM10, other studies do not support this hypothesis. Dockery and Pope (408) recently reviewed the epidemiologic literature for adverse effects, assuming that reported associations can be attributed to acute particle mass exposures. Combined effects were estimated as percent increase in comparable measures of mortality and morbidity, associated with each 10 micrograms/m3 increase in daily mean PM10 exposure (Table 7). While total mortality increased by 1% for each 10 micrograms/m3 increase in PM10, respiratory mortality increased by 3.4% and cardiovascular mortality increased by 1.4%. Hospital admissions and emergency department visits increased approximately 1% for all respiratory complaints, and 2% to 3% for asthma. Exacerbation of asthma increased by about 3%, as did lower respiratory symptoms. Small decreases in lung function, approximately 0.1%, have also been observed. This review suggests that the epidemiologic studies of adverse morbidity measures are coherent with the mortality studies showing quantitatively similar adverse effects of acute exposures to particulate pollution. Despite these epidemiologic findings for acute and chronic adverse health effects from air pollution associated with relatively low levels of inhalable particles, there are no complementary data from toxicologic studies or from acute human exposures to similar levels of respirable particles. Thus, controlled human exposures to various particles, including H2SO4, at relevant levels (< 150 micrograms/m3) have not identified significant alterations in respiratory function in healthy individuals. (ABSTRACT TRUNCATED) 0 " -! < . < . < 0 0 à ð

" 00*****impreso Blood lead levels in 2- to 3-year-old children in the Greater Bilbao Area (Basque Country, Spain): relation to dust and water lead levels. Cambra K; Alonso E Basque Government, Department of Public Health, Bilbao, Spain. Arch Environ Health, 50: 5, 1995 Sep-Oct, 362-6 The objectives of this study were to determine blood lead levels in 2-y-old children in the Greater Bilbao Area (Basque Country, Spain) and to compare those levels with the lead content of different media (i.e., house dust, park dust and soil, and water) in the child's environment. Between May and September of 1992, 138 children, aged 2 to 3 y, were studied. All children were attended by pediatricians within the public health-care network, and their parents volunteered for the study. A venous blood sample was drawn from each child and was analyzed for lead level, and the parents answered a questionnaire that addressed the socioeconomic background and habits of the children. The environment was investigated in 42 cases. Blood lead levels exceeded 15 micrograms/dl in 2% of the children, and 14% of the children had levels that exceeded 10 micrograms/dl (geometric mean = 5.7 micrograms/dl [4.7-6.7 micrograms/dl]). Blood lead levels were higher among (a) children whose mothers worked outside the home, (b) children whose fathers had only a primary-level education, and (c) children who lived in houses constructed prior to 1950. The geometrical averages of lead in house dust, park soil, and park dust were 595, 299, and 136 micrograms/g, respectively. Statistically significant linear correlation was found between blood lead level and lead content in park dust, a finding that explained a 9% variation in blood lead level; a subgroup of these children was also found to have a strong linear association between blood lead and lead content in house dust. Assessment of dietary exposure to trace metals in Baffin Inuit food. Chan HM; Kim C; Khoday K; Receveur O; Kuhnlein HV Centre for Nutrition and the Environment of Indigenous Peoples, McGill University, Montreal, Canada. Environ Health Perspect, 103: 7-8, 1995 Jul-Aug, 740-6 Chronic metal toxicity is a concern in the Canadian Arctic because of the findings of high metal levels in wildlife animals and the fact that traditional food constitutes a major component of the diet of indigenous peoples. We examined exposure to trace metals through traditional food resources for Inuit living in the community of Qikiqtarjuaq on Baffin Island in the eastern Arctic. Mercury, cadmium, and lead were determined in local food resources as normally prepared and eaten. Elevated concentrations of mercury (> 50 micrograms/100 g) were found in ringed seal liver, narwhal mattak, beluga meat, and beluga mattak, and relatively high concentrations of cadmium and lead (> 100 micrograms/100 g) were found in ringed seal liver, mussels, and kelp. Quantified dietary recalls taken seasonally reflected normal consumption patterns of these food resources by adult men and women (> 20 years old) and children (3-12 years old). Based on traditional food consumption, the average daily intake levels of total mercury for both adults (65 micrograms for women and 97 micrograms for men) and children (38 micrograms) were higher than the Canadian average value (16 micrograms). The average weekly intake of mercury for all age groups exceeded the intake guidelines (5.0 micrograms/kg/day) established by the Joint Food and Agriculture Organization/World Health Organization Expert Committee on Food Additives and Contaminants. The primary foods that contributed to metal intake for the Baffin Inuit were ringed seal meat, caribou meat, and kelp. We review the superior nutritional benefits and potential health risks of traditional food items and implications for monitoring metal contents of food, clinical symptoms, and food use. Primary structure and tissue-specific expression of blue crab (Callinectes

000465

sapidus) metallothionein isoforms. Ø " -" <.<.<Ø Ø à+Ð " ØEAuthor Brouwer M; Enghild J; Hoexum-Brouwer T; Thogersen I; Truncali A Duke University School of the Environment Marine Laboratory/ Marine Biomedical Center, Beaufort, NC 28516, USA. Biochem J, 311 (Pt 2):1995 Oct 15, 617-22 In aquatic animals, synthesis of the metal-binding protein metallothionein (MT) can be induced through exposure to elevated levels of metals in food or water. Whether the different routes of exposure lead to expression of different metallothionein isoforms in different tissues is unknown. In this study we examined the induction of metallothionein isoforms in the hepatopancreas and gills of the blue crab Callinectes sapidus. When blue crabs are exposed to cadmium in their diet, the metal accumulates in the hepatopancreas. Size-exclusion and anion-exchange chromatography show the presence of five low-molecular-mass cadmium-binding proteins. All of the observed cadmium-binding proteins belong to the class I MT family. They are designated as MT-Ia, MT-Ib, MT-Ic, MT-IIa and MT-IIb. All purified proteins run as single peaks upon rechromatography on anion-exchange HPLC, except for MT-Ic, which segregates into two peaks corresponding to MT-Ia and MT-Ic. The amino acid sequence of MT-Ia and MT-Ic is identical. MT-Ib differs from MT-Ia and MT-Ic only in having an extra N-terminal methionine. The 18 cysteine residues in MT-Ia and MT-IIa occur in identical positions; however, of the remaining 40 amino acids, 15 are found to be different. MT-IIb is identical with MT-IIa, except for an extra methionine residue at its N-terminal position. It appears therefore that, of the five observed CdMTs, only two are the products of distinct genes. CdMT-Ia and -IIa are posttranslationally modified forms of Ib and Iib, respectively, and CdMT-Ia and -Ic appear to be conformational isomers. Cadmium-induced expression of the two genes is tissue-specific. When crabs are exposed to cadmium in water, the metal accumulates in the gills, where it is bound to MT-II. MT-I is virtually absent. Measurements of environmental lead contamination and human exposure. Flegal AR; Smith DR WIGS, University of California, Santa Cruz 95064, USA. Rev Environ Contam Toxicol, 143:1995, 1-45 The importance of accurate measurements of environmental lead exposure and toxicity is substantiated by analyses documenting the global contamination of the biosphere with industrial lead and the pervasiveness of measurable lead toxicity in human populations. Those data demonstrating environmental lead contamination and toxicity have, in part, led to regulations that limit the amount of lead in some products (e.g., paint, solder, and gasolines) in many industrialized countries. These regulations have resulted in a substantial reduction in some lead discharges to the environment. In spite of these reductions, current environmental lead levels are still often more than 10-fold, and sometimes more than 10,000-fold, higher than natural levels. Further, environmental lead concentrations are expected to remain elevated for a protracted period due to continued emissions of relatively large amounts of industrial lead to the environment and the persistence of contaminant lead in the environment. Discharges of contaminant lead have resulted in increases in organism and human lead levels comparable to increases documented in environmental matrices, as indicated by a recent estimate of the natural level of lead in blood of preindustrial humans (0.016 microgram/dL or 0.8 nM). This estimate is 175-fold lower than average blood lead levels in the United States (2.8 micrograms/dL or 140 nM) and 600-fold lower than the recently (1991) revised Centers for Disease Control (CDC) action level of concern for early toxic effects in children (10 micrograms/dL or 480 nM). The significance of these comparisons to public health is corroborated by numerous studies

suggesting that there may be no lower threshold for sublethal toxicity in contemporary (i.e., lead-contaminated) humans. Those data also indicate that environmental lead concentrations that were previously considered innocuous may be deleterious to human health. It is apparent that the extent of sublethal lead toxicity in humans may be best addressed by studies that consider control populations possessing natural (i.e., preindustrial) lead burdens, as well as state-of-the-art, Ø " -# <.<.<Ø Ø à+Ð " ØG trace-metal-clean techniques and advanced instrumentation. Trace-metal-clean techniques are required to prevent the inadvertent lead contamination of samples, which has plagued many previous analyses of environmental and human lead levels. Advanced instrumentation is required to provide the sensitivity, accuracy, and precision that are needed to quantify the sublethal effects of lead concentrations at environmental levels of exposure. Fortunately, methodologies utilizing these advancements are now capable of addressing many of the important issues (e.g., lead biomolecular speciation, low exposure effects) in environmental and human lead toxicology. [Screening for lead poisoning in children by measuring lead levels in housing: a study of the Paris region] Title DÅ) Åpistage du saturnisme infantile Å! Å partir de la recherche de plomb dans l'habitat: une Å) Åtude en rÅ) Ågion parisienne. Ginot L; Peyr C; Fontaine A; Cheymol J; Buisson B; Bellia G; Da Cruz F; Buisson J Service Communal d'HygiÅ) Åne et de SantÅ) Å, Aubervilliers. Rev Epidemiol Sante Publique, 43: 5, 1995, 477-84 Screening programs for lead poisoning in France rely usually on the preliminary identification of risk factors among children seen in Maternal and Child Health (MCH) clinics. To assess the potential relevance of screening strategies based on the quantification of exposure to lead in housing, we estimated first the prevalence of exposure to lead in a representative sample of older buildings, then the prevalence of lead poisoning among children living in those buildings where high levels of lead had been found. Exposure to lead was measured in dust and paint samples collected in hallways and other collective areas of the buildings. Venous blood samples were collected from the children aged 10 months to 6 years residing in buildings where lead exceeded 1.5 g/kg in paint samples or 1000 micrograms/m2 in dust samples. Paint and dust samples were collected in 137 buildings: 74% presented high dust and/or paint lead contents. Blood samples were collected from 145 out of a total of 189 children residing in these buildings: blood lead levels (PbB) were higher than or equal to 10 micrograms/dL for 65% of these children; 29% were higher than or equal to 15 micrograms/dL, 16% higher than or equal to 20 micrograms/dL. Out of 42 children with PbB > or = 15 micrograms/dL, 21 had not been previously identified through the screening program conducted in local MCH clinics. Clinic-based and environment-based screening appeared to be complementary. It seems thus justified to develop screening strategies based on the assessment of exposure to lead in the environment. Hazard to man and the environment posed by the use of urban waste compost: a review. DÅ) Åportes I; Benoit-Guyod JL; Zmirou D Public Health Laboratory, School of Medicine and Pharmacy, Joseph Fourier University, La Tronche, France. Sci Total Environ, 172: 2-3, 1995 Nov 30, 197-22 This review presents the current state of knowledge on the relationship between the environment and the use of municipal waste compost in terms of health risk assessment. The hazards stem from chemical and microbiological agents whose nature and magnitude depend heavily on the degree of sorting and on the composting methods. Three main routes of exposure can be determined and are quantified in the literature: (i) The ingestion of soil/compost

000466

mixtures by children, mostly in cases of pica, can be a threat because of the amount of lead, chromium, cadmium, PCDD/F and fecal streptococci that can be absorbed. (ii) Though concern about contamination through the food chain is weak when compost is used in agriculture, some authors anticipate accumulation of pollutants after several years of disposal, which might lead to future hazards. (iii) Exposure is also associated with atmospheric dispersion of compost organic dust that convey microorganisms and toxicants. Data on hazard posed by organic dust from municipal composts to the farmer or the private user is scarce. To date, microorganisms are only measured at composting plants, thus raising the issue of extrapolation to environmental situations. Lung damage and allergies may occur because of organic dust, Gram negative bacteria, actinomycetes and fungi. Further research is needed on the risk related to inhalation of chemical compounds.

Influence of lead acetate on the histological, ultrastructural and histochemical picture of the livers of albino rats. Radwanska-Konarzewska U; Wozniak F; Siezieniewska Z Katedra i Zaklad Patomorfologii. Akademia Medyczna w Lublinie. Ann Univ Mariae Curie Sklodowska [Med], 48:1993, 141-7 The amount of lead pollution in the environment is increasing proportionally to the development of industry. Lead is capable of damaging the organism in many ways due to its high affinity to various tissues, different enzymes and serum proteins and its tendency to cumulate (1, 14). Acute lead poisoning occurs in people who have had intense, but short-term contact with organic lead compounds (tetraethyllead) used as an antidetonant in motor fuels, or plumbous orthoplumbate (red lead), which is an important component in anticorrosive paints (4, 6). Chronic poisoning by lead and lead salts, which used to occur in printers and workers in battery factories, is now a threat to the whole human population because of the hundreds of thousands of tons of tetraethyllead used as a fuel additive. This substance pollutes not only the atmosphere, but also the soil and the water and because of this, the food (10). The toxic effects of lead on the central and peripheral nervous system and the hematopoietic system is well known (9, 12). Less clear, however, are the toxic effects of this metal on the liver. As of now, there are still different views on the existence of negative effects of lead on the livers of people and animals exposed to this metal. Some researchers found no changes in the liver in cases of long-term contact with lead (3). [Toxic compounds in our environment--challenge or cost of prosperity] Title Schadstoffe in unserer Lebensraum--Herausforderung oder Preis f#r den Wohlstand? Forth W Walther-Straub-Institut f#r Pharmakologie und Toxikologie, Ludwig-Maximilians-Universit#t M#nchen. Zentralbl Hyg Umweltmed, 197: 1-3, 1995 Apr, 162-79 goal of this contribution was the description of the possibilities as well as the limitations to which a toxicologist is confronted when evaluating potential toxic compounds to which human beings can be exposed during their lifetime. The number of substances is overwhelming. The available methods for the evaluation are not satisfactory for everybody. Nevertheless, the results are not as bad as sometimes is asserted: in the industrial societies, the expected life span of men increases. The evaluation of the effects is unsatisfactory especially for the carcinogenic and allergic potential of foreign compounds. This is the consequence of our limited knowledge about the biological processes underlying these effects, or, in other words, research must be intensified in this field. Finally, the experiences of the public as well as of the media with risks and their evaluation are not satisfactorily developed. The intellectual

development of the public is rather slow compared to that in business life and economics. This means that everybody oughts to acquire knowledge in order to be able to make appropriate decisions in a world increasingly complicated. Otherwise, our society ends up with a convenient home for the aged combined with a cemetery. And this, by the way, is less than a recreation center (Freizeitpark). [Lateral dominance in 182 children. 1. The antimeres, the praxis, the structure-performance relation] Title A domin#ncia lateral em 182 crian#as. 1. Os ant#meros, as praxias, a rela#o #m #o estrutura-desempenho. Jordy CF Escola Paulista de Medicina, Universidade de S#o Paulo, Brasil. J Neuropsiquiatr, 53: 3-B, 1995 Sep, 631-8 182 normal children from 6 to 14 years old presenting learning difficulties were neurologically examined. A 149 items questionnaire covering the intrauterine, peri and post partum life were answered by parents and afterwards detailed in interview consultation. Special procedures on motor skill were added to the usual neurological examination, to text motor performance differences between antimeres. Dextrality appeared in 156 cases (85.71%), sinistrality in 8 (4.39%) and in 18 cases (9.89%) the lateral dominance could not be determined. The concept of ambidextrality was rejected for the bilateral equivalence in motor competence was not found in the subjects. The results lead to interpret the lateral dominance as a proportional distribution of motor performances in the right and left halves of the body in a process of constant improvement of motor skills which takes place in and belongs to the development of interdependence between the individuals and their environment. It is by way of such interrelationships that the significant motor activity (praxias) is acquired. Lateral dominance is considered a dynamic mechanism resulting from this interactive process which aim is directed together with other mechanisms to provide and improve the human being survival. The hazards of synthetic (anthropogenic) chemicals. Silbergeld EK University of Maryland Medical School, Department of Epidemiology and Preventive Medicine, Baltimore 21201, USA. Toxicol Lett, 82-83:1995 Dec, 835-41 Currently, there is a highly politicized debate on the comparative risks of naturally occurring and synthetic chemicals. Since humans are often exposed to complex mixtures of both classes of chemicals, the real-world value of this debate is unclear. However, in any such comparison, it is important to realize that some naturally occurring substances--such as lead or tobacco--have been so altered or disturbed by human activity that they are best considered as products of human activity, or anthropogenic. Reasons for concern over synthetic and anthropogenic chemicals include: persistence and propensity for long-term storage in biota and the environment; structural similarity to endogenous biomolecules; and additivity to natural hazards.

Lead exposure of the child population in Greece. Maravelias C; Athanaselis S; Poulos L; Alevisopoulos G; Ewers U; Koutselinis A Department of Forensic Medicine and Toxicology, University of Athens, School of Medicine, Greece. Sci Total Environ, 158: 1-3, 1994 Dec 18, 79-83 Lead exposure of the child population was studied in three different areas in Greece: Kalamata which is a rural area of Southern Greece; Tavros, a district of Athens with a considerable industrial activity; and Lavrion, a small city near Athens where a lead-zinc mining and smelting industrial complex has existed for more than 90 years. The results were evaluated with respect to a number of individual, social and environmental variables

000467

(i.e. smelter, occupation of the father) especially those concerning the area of Lavrion which is the most heavily polluted area in Greece. The results of this study can be considered as an index for the extent of the lead pollution problem in the named areas of Greece. Blood lead levels in shopkeepers and car traffic pollution in Liguria, Italy. Orlando P; Perdelli F; Cristina ML; Oberto C; Viglione D; Palmieri S; Vari A; di Bello F University of Genoa, Institute of Hygiene and Preventive Medicine, Italy. Eur J Epidemiol, 10: 4, 1994 Aug, 381-5

A study was conducted into the exposure to atmospheric pollution caused by car traffic by measuring blood lead (PbB) levels in a sample of 657 adult individuals (shopkeepers) all living in Liguria. The mean level of blood lead in all examined individuals was 9.39 micrograms dl-1 (0.45 mumol per liter); C.I. 95%: 9.06-9.75 micrograms dl-1; 0.44-0.47 mumol per liter) with a range between 2.0 and 46.03 micrograms dl-1 (0.10-2.22 mumol per liter). The average Pb values in individuals working in streets with high and very high traffic was 8.30 micrograms dl-1 (0.40 mumol per liter); C.I. 95%: 7.41-9.31 micrograms dl-1; 0.36-0.45 mumol per liter) and 9.98 micrograms dl-1 (0.48 mumol per liter); C.I. 95%: 9.62-10.37 micrograms dl-1; 0.46-0.50 mumol per liter), respectively. These average blood lead levels were statistically greater than the average PbB values of those working in low traffic streets (7.06 micrograms dl-1; 0.34 mumol per liter; C.I. 95%: 6.22-7.94 micrograms dl-1; 0.30-0.38 mumol per liter). The percentile distribution (50th, 90th and 98th P) for all subgroups surveyed has always proved to be below the maximum limits specified by EC Directive No. 77/312. Internal lead and cadmium exposure in 6-year-old children from western and eastern Germany. Begerow J; Freier I; Turfeld M; KrÄ Åmer U; Dunemann L Medizinisches Institut fÄg År Umwelthygiene, Heinrich-Heine-UniversitÄt-Ät, DÄg Ässeldorf, Germany. Int Arch Occup Environ Health, 66: 4, 1994, 243-8

Lead and cadmium levels in blood and deciduous teeth (shed incisors only) of 6-year-old German children were determined in 1991 in a large epidemiological study carried out in rural and urban areas of western Germany (Duisburg, Essen, Gelsenkirchen, Dortmund, Borken) and eastern Germany (Leipzig, Halle, Magdeburg, Osterburg, Gardelegen, Salzwedel). In total, blood lead and cadmium levels of 2311 German children and tooth lead and cadmium levels of 790 German children were analyzed. Blood lead levels were generally low in all study areas with geometric means between 39.3 micrograms/l and 50.8 micrograms/l in the western German and between 42.3 micrograms/l and 68.1 micrograms/l in the eastern German study areas. The mean blood lead level of Turkish children (n = 213) living in the western German study areas was 50.1 micrograms/l and thus 5.6 micrograms/l higher than the overall geometric mean of the western German children. The higher exposure may be explained by a higher oral uptake from food and different living conditions. These children were excluded from multiple regression analysis because they were all living in the western study areas. The mean tooth lead levels ranged between 1.50 and 1.74 micrograms/g in the western and between 1.51 micrograms/g and 2.72 micrograms/g in the eastern study areas. Thus, they show a distribution pattern similar to blood. Blood and tooth lead levels were higher in urban than in rural areas and higher in the eastern German than in the western German study areas. With regard to the blood and tooth cadmium concentrations, no significant differences between the study areas could be found. (ABSTRACT TRUNCATED AT 250 WORDS) Blood lead levels in the general population of Taiwan, Republic of China. Liou SH; Wu TN; Chiang HC; Yang GY; Wu YQ; Lai JS; Ho ST; Guo YL; Ko YC; Chang PY School of Public Health, National Defense Medical Center,

Taipei, Taiwan, R.O.C. Ö " -' <.<.< Ö ò à+D " ÖESource Int Arch Occup Environ Health, 66: 4, 1994, 255-60

The purpose of this study was to investigate the environmental lead exposure of the general population in Taiwan. A total of 2919 residents of Taiwan were selected by multistage sampling methods. The participants were characterized by questionnaires and 10 ml venous blood was collected for blood lead measurement. A quality assurance/quality control program was designed during the analysis of blood lead levels. The mean blood lead level of 2719 residents without occupational lead exposure was 8.29 +/- 5.92 micrograms/dl. After adjustment for age and sex distribution to the Taiwan general population, the mean blood lead level was 8.10 micrograms/dl. Adjusted for an 11% underestimation of blood lead levels among the six laboratories, the mean blood lead level was estimated to be 8.99 micrograms/dl. This study also found that blood lead levels were associated with personal characteristics, i.e., gender, ethnic group, education level; lifestyle factors, i.e., smoking, alcohol consumption, sources of drinking water; and residential location, i.e., levels of urbanization, distance of house from the road. However, age, floor of residence, milk consumption, betel nut consumption, and Chinese herbal drug consumption were not found to be associated with blood lead levels. These results show that blood lead levels in Taiwan residents were not higher than in most developed and developing countries. Environmental lead pollution does not seem to be a serious problem in Taiwan. Lead poisoning from paint--still a potential problem. Horner JM Department of Environmental and Geographical Studies, Roehampton Institute, Digby Stuart College, London. J R Soc Health, 114: 5, 1994 Oct, 245-7

Regulations were introduced in the UK in the 1970s to limit the lead content of paints. This has greatly reduced the number of children poisoned by ingesting leaded paint. However, it is argued that old paintwork is still a lead poisoning hazard in some older UK properties. Paint collected from a children's nursery classroom in a London school included samples with lead concentrations exceeding suggested safety levels. Lead poisoning from paint is a problem which should not be forgotten in the UK, and may be a more serious problem in countries with less stringent lead in paint regulations. Lead exposure potentiates the effects of NMDA on repeated learning. Cohn J; Cory-Slechta DA Department of Environmental Medicine, University of Rochester School of Medicine & Dentistry, NY 14642. Neurotoxicol Teratol, 16: 5, 1994 Sep-Oct, 455-65

Several studies now suggest that Pb exposure disrupts NMDA receptor complex function, findings which may have implications for understanding the basis of Pb-induced learning impairments. To further evaluate this possibility, the behavioral properties of the glutamate agonist NMDA were compared in rats that had been chronically exposed to 0, 50, or 250 ppm Pb acetate in drinking water from weaning. Acute administration of NMDA (20-50 mg/kg IP) decreased accuracy in both the repeated acquisition (RA) and performance (P) components of this multiple schedule with a selective effect on the learning component in the second half of the session. Analyses of error patterns revealed that the disruption of RA accuracy derived from initial perseverative errors followed by errors of skipping forward and backwards in the 3-member response sequence. Response rates in both RA and P were suppressed by NMDA. Pb-exposure potentiated the accuracy-impairing effects of NMDA by further increasing the frequencies of these error classes, and likewise potentiated the rate-suppressing effects of NMDA. These findings add further support to the possible involvement of Pb with the NMDA receptor complex. Preventing childhood lead poisoning. Needleman

000468

HL University of Pittsburgh School of Medicine, Pennsylvania 15213. Prev Med, 23: 5, 1994 Sep, 634-7. Of all the neurotoxins, lead is the longest known and best understood. Because we know so much about what it does, where it is, and what is required to remove it from the presence of children, lead poisoning should also be one of the easiest diseases to eradicate. Despite this, progress in the primary prevention of childhood lead poisoning has been halting and erratic. In this paper, I outline the rapidly advancing state of knowledge on the epidemiology and toxicology of lead, examine some of the reasons for the gap between what is known and what has been accomplished, and outline the steps toward authentic primary prevention. Eradication of childhood lead poisoning is a realizable goal. Its importance is unquestioned; former Secretary of the Department of Health and Human Services Louis Sullivan declared in 1991 that it is the most serious environmental disease of North American children. Estimation of the geometric means and the reference values of blood lead levels among Koreans. Kim H; Cho SH Department of Preventive Medicine, College of Medicine, Chungbuk National University, Cheongju, Korea. J Korean Med Sci, 9: 4, 1994 Aug, 304-12. Blood lead concentrations of Koreans who have not been exposed to lead occupationally, show a wide range of variation. Despite the fact that blood lead concentration reveals a long-normal distribution, geometric means and standard deviations have not been presented in almost all studies on blood lead levels in Koreans. A new meta-analytical method was applied to estimate the theoretical geometric means, the standard deviations of the logarithm, and the reference values of blood lead concentrations among Koreans based on arithmetic means and standard deviations reported, and to compare them to those of other countries. Estimated geometric means of Korean men, women, and men and women, were 18.03, 13.13, and 15.80 micrograms/dl, respectively. Values of 90, 95, and 99 percentile for Korean men were 31.81, 37.36, and 50.52 micrograms/dl, for women, 28.41, 35.34, and 53.24 micrograms/dl, and for men and women, 31.42 micrograms/dl, 38.17 micrograms/dl, and 54.95 micrograms/dl, respectively. These values are higher than those of neighboring countries, such as China and Japan. Neurophysiological aspects of hippocampal neurotoxicity. Wiegand H; Altmann L Medical Institute of Environmental Hygiene, Heinrich-Heine-University DÄG Asseldorf, Germany. Neurotoxicology, 15: 3, 1994 Fall, 451-8. Identification and analysis of chemical neurotoxicity in the central nervous system deals with synaptic transmission and plasticity. The hippocampus slice technique rendered a powerful tool for electrophysiological analysis of these events as modulated by neurotoxic chemicals. It does not only allow the detection of potentially harmful compounds, but also the elucidation of their mechanism of action. This might render it possible to analyze the risk of neurotoxic chemicals on the basis of quantitative data. Neurochemical aspects of hippocampal and cortical Pb2+ neurotoxicity. Guilarte TR; Miceli RC; Jett DA Department of Environmental Health Sciences, Johns Hopkins University School of Hygiene and Public Health, Baltimore, Maryland. Neurotoxicology, 15: 3, 1994 Fall, 459-66. The amino acid glutamate is the neurotransmitter used by most excitatory synapses in the mammalian brain. Glutamatergic synapses in the hippocampus and cerebral cortex play an important role in synaptic plasticity. In the developing brain, the interaction of neurotoxins with presynaptic and/or postsynaptic sites on glutamatergic neurons could alter synaptic plasticity. Recent studies have shown that chronic lead (Pb2+) exposure may impair neuronal process underlying synaptic plasticity via a direct interaction with the N-Methyl-D-Aspartate (NMDA) glutamate

receptor subtype. The NMDA receptor-ion channel complex regulates calcium influx and is involved in the initiation of changes in synaptic plasticity. In vitro and in vivo neurochemical studies have found that Pb2+ has a marked inhibitory effect on the activation of the NMDA receptor-ion channel complex. Evidence indicates that the inhibitory effect of Pb2+ on the NMDA receptor complex may be mediated by its interaction with a zinc regulatory site on the receptor complex. The ability of Pb2+ to inhibit NMDA receptor-ion channel function was shown to be age-dependent and brain region-specific. The age-dependent effects of Pb2+ on the NMDA receptor complex may help explain the selective toxicity of this heavy metal in the developing brain. Neurobehavioral and neurophysiological observations in six year old children with low lead levels in East and West Germany. Winneke G; Altmann L; Krämer U; Turfeld M; Behler R; Gutschmuths FJ; Mangold M. Environmental Hygiene, University of DÄG Asseldorf, FRG. Neurotoxicology, 15: 3, 1994 Fall, 705-13. Within a larger comparative environmental health screening program in East and West Germany neurobehavioral and neurophysiological measures were taken in 367 six year old children in Leipzig (N = 179), Gardelegen (N = 68), and Duisburg (N = 120). Lead concentrations from venous blood samples (PbB) and from deciduous teeth (PbT) were measured as markers of environmental lead exposure by electrothermal AAS. Dependent variables included four subtests from NES1 (tapping, reaction time, pattern comparison, and Benton visual retention), as well as VEP-latencies (N2, P100, N3) evoked by checkerboard patterns of different size and contrast. The overall median blood lead-concentration was 5 micrograms/dl (range: 1.3-19.0 micrograms/dl), and the corresponding tooth lead-concentration was 2 micrograms/g (0.2-14 micrograms/g). The 95-percentile of the overall frequency distribution for PbB was below 10 micrograms/dl. Associations between markers of lead-exposure and neurobehavioral or neurophysiological outcome were assessed by means of multiple linear or logistic regression analyses. After adjusting for relevant confounders/covariates significant (p < 0.05) Pb-related deficit was found for tapping and pattern recognition with respect to PbB but not PbT. No such associations could be established for VEP-latencies. These results are compatible with the hypothesis that subtle neurobehavioral dysfunction in children may be associated with very low PbB. Effect of lead exposure on patterns of food intake in weanling rats. Minnema DJ; Hammond PB Department of Environmental Health, University of Cincinnati, College of Medicine 45267-0056. Neurotoxicol Teratol, 16: 6, 1994 Nov-Dec, 623-9. The reduction in growth resulting from lead (Pb) exposure in weanling rats is consistent with a lowering of the biological set-point for food intake. In this study the effects of lead on the patterns of food intake were examined. For 10 days (from ages 26 to 36 days), female rats were provided with drinking water containing 250 ppm lead as the acetate (n = 6) or equivalent acetate as sodium acetate (n = 6). A computerized system was used to monitor daily food intake at 5-min intervals over 10 successive 23-h periods (each period consisting of 12 h dark, 11 h light). Control rats consumed approximately 75% to 85% of their food intake during the dark phase. Exposure to lead resulted in decreased body weight, tail length, and cumulative food intake. Decreased food intake associated with lead during the first 6 days of exposure was due to a decrease in the size of each meal during the dark phase, which reflected a decrease in the duration of each meal. These results suggest that lead, at least initially, was affecting food-satiety

000469

signals to produce a premature termination of food intake during a meal. After 6 days, the lead-exposed rats appear to have adjusted their meal size and meal duration to approximately control values. However, this compensation appears to have occurred at the expense of the daily (nocturnal) number of meals, which decreased slightly (although not significantly) in lead-exposed animals. Thus, the total daily intake of food in lead-treated animals remained depressed relative to control animals. [The level of metal impurities in some edible mushrooms growing wild] Title Poziom zanieczyszczenia metalami niekt; rych grzyb; w jadalnych dziko rosnacych. Statkiewicz U; Gayny B Orodka Badawczo-Rozwojowego Produkcji Lesnej Las, Konstancinie-Jeziornie. Roczn Panstw Zakl Hig, 45: 1-2, 1994, 27-35 The amount of lead, cadmium, copper, zinc and mercury has been determined by atomic absorption spectroscopy in 96 samples of edible mushrooms, growing wild fresh edible fungus and dried (Boletus scaber, ceps) mushrooms, acquired from 6 regions in Poland: Zielonog; rskie, Torunskie, Ostroleckie, Radomskie, Warszawskie and Lubelskie in 1990 and 1991. The level was found to be higher than that allowed by the polish standard PN-89/A-78510 Mushroom Processed Foods. Dried mushrooms and other legal acts eg. Instruction of the Ministry of Health section Social Welfare of 12th November 1990, the content of zinc in dried mushrooms (all samples) and in fresh edible fungus from the Zielonog; rski and Torunski region. The content of copper in fresh edible fungus did not usually correspond with the requirements, whereas in the dried mushrooms (Boletus scaber, ceps) it exceeded the level only insignificantly in individual samples (average from studied regions was found to be within limits). The content of lead in dried mushrooms complied with the requirements of the standard, except for samples of ceps from Zielonog; rski region, where it insignificantly exceeded the allowed level of 2.0 mg/kg. The  " - * <   +  "   average content of zinc and copper in dried mushrooms did not exceed the allowed levels. The levels of mercury determined in the studied samples do not cause any excitement in light of the FAO/WHO agreements. A high level of contamination with cadmium was noted in all studied samples, being 2.5 times higher in edible fungus, 6-8 times higher in Boletus scaber and 19-23 times higher in dried ceps. (ABSTRACT TRUNCATED AT 250 WORDS) [Evaluation of cadmium and lead intake from vegetables by the consumer in the province of Katowice] Title Ocena pobrania kadmu i ołowiu z warzywami przez konsument; w w wojew; dztwie katowickim. Lorek E Instytutu Rynku i Konsumpcji Akademii Ekonomicznej, Katowicach. Roczn Panstw Zakl Hig, 45: 1-2, 1994, 37-44 The amounts of Cd and Pb consumed with vegetables were determined in four groups of households: workmen, workmen-peasants, farmers and pensioned workers and persons receiving disability allowances. The chemical analysis was done, in the first place, of vegetables with edible roots in which Pb and Cd were determined by atomic absorption spectrophotometry. The vegetables were bought in 1986-1987 by the Province Gardeners Cooperative in the Province of Katowice (mining and industrial region) and from the Province of Katowice and Warsaw. The amount of Cd or Pb found in weight unit of a given vegetable multiplied by the amount of this vegetable consumed in a week served as a measure of the amount of these metals taken by the consumer. After comparing of this amount with the acceptable dose the per cent of this dose obtained from vegetables was calculated. The study showed that the vegetables brought from other provinces than Katowice contained several times less Cd and Pb than those grown in the Province of Katowice. The lowest intake of Cd and Pb with vegetables was found in the households of

workmen and the highest one in the households of farmers who consumed nearly exclusively vegetables grown on their farms. The vegetables from the Province of Katowice accounted in farmer families for 40% of the acceptable maximal weekly intake of cadmium, and the intake of lead was even above this maximal level. The differences in the weekly intake of these metals between the studied groups of households were due to differences in the amounts of consumed vegetables. (ABSTRACT TRUNCATED AT 250 WORDS) [Exposure to lead in selected population groups. IV. Lead exposure among nursery children in Chorzow] Title Narazenie na o; w wybranych grup ludnosci. Cz. IV. Narazenie na o; w dzieci zlozkowych Chorzowa. Kasznia-Kocot J; Jarkowski M; Grabecki J; Panasiuk Z IV Kliniki Pediatrii Slaskiej Akademii Medycznej, Chorzowie. Roczn Panstw Zakl Hig, 45: 1-2, 1994, 45-53 Main goal of this studies was to determine the level of exposure to lead of selected representatives of children's population attended nursery school, aged 2 to 4 years, residing in three different districts of Chorz; w as far as the traffic intensity is concerned. It is the most densely populated town in Poland with the high concentration of industry and considerable intensity of traffic. Number of tested samples of children were 41, 43, 40. The tests were made in summer. Lead (Pb-B), zinc protoporphyrin level (ZPP), hemoglobin (Hb), erythrocyte count in blood (E) and delta-aminolevulinic acid (ALA) and creatinine concentration in urine were determined. The highest Pb-B level observed was 300 micrograms/l, the geometric mean of the blood lead concentrations were: 131, 132, and 199 micrograms/l and were not statistically valid in their differences. Median ranges were 118, 133 and 144 micrograms/l. Averages above the level 200 micrograms/l were found in the case of 19.5%, 11.8% and 15% children. Data were estimated in comparison with WHO recommended admissible blood lead level in overall population. The obtained data suggest higher lead absorption in the examined children's population.   (\$a" title Cord blood levels of potentially neurotoxic pollutants (polychlorinated biphenyls, lead and cadmium) in the areasPrague (Czech Republic) and Katowice (Poland). Comparison with reference values in The Netherlands. The Czech/Polish/Dutch/German Research Team.   (\$:" Author Janousek V; Krijt J; Malbohan M; Cibula D; Lukas W; Zejda JE; Lammerms W; Huisman M; Boersma ER; van Paauw CG; et al Department of Pathological Physiology, First Medical Faculty, Charles University, Prague, Czech Republic. Cent Eur J Public Health, 2: 2, 1994 Dec, 73-6 In a preliminary study the levels of four non-planar polychlorinated biphenyls congeners (118, 138, 153 and 180), and of the toxic metals lead and cadmium, and their antagonist selenium and zinc were measured in cord blood from  " - + <   +  "   apparently healthy neonates from the region of Prague and Upper Silesia (Katowice). These "background" levels were compared with similar values from neonates in the Netherlands. It was found that the levels of three PCB congeners (138, 153 and 180) were significantly higher in the Prague samples than in the Netherlands; but in the Katowice group they were significantly lower. In Upper Silesia (Katowice) the values of the metals lead and cadmium, and in Prague those of cadmium and selenium were significantly higher than in the Netherlands. The importance of these findings is discussed. It is argued that neurotoxic effects of perinatal exposure can be expected to be more prominent in Central Europe than in Western European countries. A more thorough study is indicated and will be undertaken by a joint Czech/Polish/Dutch/German research group. of Publication English Fractional clearances of low molecular weight proteins in lead workers.

000470

Konishi Y; Endo G; Kiyota A; Horiguchi S Department of Preventive Medicine and Environmental Health, Osaka City University Medical School, Japan. Ind Health, 32: 3, 1994, 119-27

Urinary alpha 1-microglobulin (alpha 1-m) and beta 2-microglobulin (beta 2-m) can be used as early indicators of renal tubular dysfunction. However, low levels of lead exposure cause an increase in urinary alpha 1-m, but not in urinary beta 2-m. In order to clarify the level of tubular dysfunction in early lead nephropathy, fractional clearances of alpha 1-m (FC-alpha 1-m) and beta 2-m (FC-beta 2-m), i.e., the ratios of these clearances to the creatinine clearance, were measured in 99 male lead workers. Blood urea nitrogen, serum creatinine, uric acid, and urinary creatinine and N-acetyl-beta-D-glucosaminidase activity were also measured to diagnose the presence of other renal dysfunction. The median of FC-alpha 1-m was 0.13% in the control group. The FC-alpha 1-m increased in lead workers with blood lead (B-Pb) levels above 20 micrograms/dl. The correlation of FC-alpha 1-m with urinary alpha 1-m was highly significant, but there was no correlation with serum alpha 1-m. The median of FC-beta 2-m was 0.065% in the control group. There was a correlation of FC-beta 2-m with FC-alpha 1-m, but there was no correlation with B-Pb, or with serum beta 2-m. These results suggest the following: There was a very low excretion rate of alpha 1-m and beta 2-m in both the control group and the lead exposed groups. The excretion rate of alpha 1-m was higher than that of beta 2-m. (ABSTRACT TRUNCATED AT 250 WORDS)

New environmental agents associated with lupus-like disorders. Love LA Office of Special Nutritionals, Center for Food Safety and Applied Nutrition, Food and Drug Administration, Washington DC 20204. Lupus, 3: 6, 1994 Dec, 467-71

An increasing number of environmental agents are being investigated as possible risk factors in the etiology of certain connective tissue disorders. Exposure to a variety of therapeutic agents, foods and dietary supplements, occupational and other toxic exposures, and infectious agents has been associated with the onset of lupus-like disorders. The mechanisms by which these agents might induce lupus remain unknown but may involve alteration of cellular components or activation of the immune system. Individual host susceptibility factors, including pre-existing organ dysfunction and particular metabolic enzyme or immunogenetic phenotypes, may also be important risk factors for development of environmentally-associated lupus-like disorders. Awareness of the many environmental agents implicated with lupus and related disorders, and dissection of their pathogenetic mechanisms through appropriate case-controlled investigations, may identify additional toxic agents and may lead to a better understanding of the idiopathic lupus syndromes.

Lead alters the immunogenicity of two neural proteins: a potential mechanism for the progression of lead-induced neurotoxicity. Waterman SJ; el-Fawal HA; Snyder CA New York University Institute of Environmental Medicine, Nelson Institute of Environmental Medicine, Tuxedo 10987. Environ Health Perspect, 102: 12, 1994 Dec, 1052-6

Some heavy metals have been suspected of playing a role in the pathogenesis of nervous system diseases such as multiple sclerosis, amyotrophic lateral sclerosis, and Alzheimer's disease. In these disorders, autoantibodies against neural proteins are evident at some stage of the disease. Lead is known to affect both the immune and nervous systems. Work in our laboratory has shown that lead exposure leads to the production of autoantibodies against neural proteins, including myelin basic protein (MBP) and glial fibrillary acidic protein (GFAP). We hypothesize that lead aggravates neurological disease by enhancing the immunogenicity of

nervous system proteins, including MBP and GFAP. To test this hypothesis, lead-altered protein was prepared by incubating MBP or GFAP with lead acetate for 24 hr. On days 0, 14, and 28, mice received inoculations with either saline, native protein, or lead-altered protein. Anti-MBP and anti-GFAP, isotypes IgM and IgG, were measured in sera by ELISA on day 38. Sera of mice treated with lead-altered MBP had statistically higher anti-MBP IgG titers than both control and native MBP-immunized mice. An analogous response was seen in mice immunized with lead-altered GFAP. Supernatants from lectin-stimulated splenocytes were also examined for antibody titers and for interleukin 2 (IL-2) and interleukin 6 (IL-6) levels. A significant increase in IL-6 production was seen in mice immunized with lead-altered MBP but not with lead-altered GFAP. No changes were observed in the IL-2 levels of mice immunized with either lead-altered protein. (ABSTRACT TRUNCATED AT 250 WORDS)

[Lead poisoning in children from the industrial region of Silesia--markers of chronic intoxication] Title Intoksykacja ołowiowa u dzieci w wielkoprzemysłowym rejonie slaska--markery przewlekłego zatrucia. Sada-Cieslar M; Mazur B; Buszman Z; Cieslar G IV Katedry i Kliniki Pediatrii Slaskiej Ak. Med., Chorzowie. Wiad Lek, 47: 15-16, 1994 Aug, 601-7

In the paper the degree of lead micro-intoxication was assessed in school children from the region of emissions of the Mining-Ironworks Complex "Boleslaw" in Bukowno. The study included 323 children of either sex aged from 7 to 14 years. In these children the levels of selected lead intoxication markers were determined--concentration of zinc protoporphyrin (ZnPP) in the erythrocytes and concentration of delta-amino-laevulinic acid (ALA) in urine. The obtained results were compared with corresponding results in the control group which consisted of 163 children of the same age, living in a control area without exposure to heavy metals. In the studied group in all age subgroups, significantly higher ALA concentrations in urine were observed in comparison to the control group. At the same time, exceeding of upper acceptable range of ALA concentration in the organism was five times more frequent in this group. On the other hand, the concentration of ZnPP in the erythrocytes failed to show any significant differences between the compared groups in any of the analysed age subgroups. On the basis of the obtained results it was demonstrated that the school children living in the region of emissions of the MIC "Boleslaw" had biochemical features of long-term lead microintoxication. As it seems, the concentration of ALA in urine is of greater diagnostic value in comparison to the concentration of ZnPP in the erythrocytes in screening examinations in these children. [Lead poisoning in children from the industrial region of Silesia--hematologic indices] Title Intoksykacja ołowiowa u dzieci w wielkoprzemysłowym rejonie slaska--wskaźniki hematologiczne. Sada-Cieslar M; Mazur B; Buszman Z; Cieslar G IV Katedry i Kliniki Pediatrii Slaskiej Ak. Med., Chorzowie. Wiad Lek, 47: 15-16, 1994 Aug, 608-13

In the paper, the basic parameters of blood morphologic pattern were assessed in school children exposed to toxic heavy metal emission. The studies included 323 children aged from 7 to 14 years, living in the region of emissions of the Mining-Ironworks Complex "Boleslaw" in Bukowno. In these children haemoglobin concentration, haematocrit and erythrocyte and leucocyte counts were determined using routine laboratory tests. The obtained results were compared with corresponding results in the control group which consisted of 163 children of either sex living in a control region without exposure to heavy metals. In the studied group in most age subgroups significant decreases of erythrocyte count haemoglobin concentration and increases of haematocrit value were

000471

below the detection limit of 4 micrograms/dl. Statistical analyses specific to the problem of below-detection values (i.e., dichotomization of variables, the probability plot method of estimation, and the bootstrap estimate of the standard error) were conducted to detect neighborhood differences. A child who lived in Globeville, the neighborhood surrounding the refinery, had a slightly higher probability of having a blood lead level \geq 5 micrograms/dl. Yet, the results as a whole documented the striking decline in blood lead levels in urban children after the deleading of gasoline. History of lead exposure in children revealed from isotopic analyses of teeth. Gulson B; Wilson D CSIRO/DEM, North Ryde, Australia. Arch Environ Health, 49: 4, 1994 Jul-Aug, 279-83 A pilot study to evaluate the efficacy of using high precision lead isotopes as an indicator of previous lead exposure in children was undertaken on deciduous teeth from 10 children in a lead-mining city. The present study illustrates the applicability of the method and provides data from two subjects who had different exposure to lead during early childhood. Teeth were examined by slicing the crowns into upper and lower sections and/or by selective dissolution with different mineral acids. Different exposures to mine lead and other sources, such as food, water, air (gasoline), are readily detected in any tooth from an individual. Early health effects and biological monitoring in persons occupationally exposed to tetraethyl lead. Zhang W; Zhang GG; He HZ; Bolt HM Institute of Occupational Medicine, Tongji Medical University, Wuhan, Hubei, P.R. China. *Occup Environ Health*, 65: 6, 1994, 395-9 Dependent on the level of occupational exposure to tetraethyl lead, the occurrence of early signs of toxicity and the urinary excretion of triethyl lead, diethyl lead and total lead compounds were investigated. This was done in the following cohorts in the province of Hubei, China: 277 workers at gasoline depots exposed to gasoline, 36 traffic policemen exposed to automobile exhaust and 342 public office workers (virtually non-exposed controls). Mean external tetraethyl lead exposure concentrations were 84.8 micrograms/m³ (as Pb) for the gasoline depot workers, 5.2 micrograms/m³ for traffic police and 1.1 microgram/m³ for the controls. No significant subclinical indications of organic lead toxicity were found in the group of traffic policemen compared with the controls. In the cohort of gasoline workers, however, there was a statistical increase (vs controls) in the frequency of appearance of tremor and of sinus bradycardia. When the cohort of gasoline workers was divided into subgroups of different ranges of exposure, dose-dependence was noted. In general, the urinary excretion of triethyl lead was very low compared to that of diethyl lead, which appears to be a sensitive and specific indicator of exposure to tetraethyl lead; total lead excretion did not correlate well with actual external tetraethyl lead exposure. On the basis of these data it seems that current occupational exposure limits for tetraethyl lead are inadequate and need to be revised. In addition, a biological limit, based on urinary diethyl lead excretion, may be proposed. Body lead stores and urate excretion in men with chronic renal disease. Lin JL; Huang PT Chang Gung Medical College, Lin-Kou Medical Center, Taipei, Taiwan, ROC. *J Rheumatol*, 21: 4, 1994 Apr, 705-9 **OBJECTIVE.** To determine the relationship of urate excretion to body lead stores in patients with chronic renal disease without previous lead exposure. **METHODS.** We compared 40 male subjects in 3 groups, on the basis of their serum creatinine and histories of gout, with serum urate, creatinine clearance, urate clearance, daily urate excretion, fractional urate excretion, and body lead stores.

Group 1 consisted of 10 patients with normal serum creatinine levels and no evidence of gout. Group 2 contained 10 men with gout and abnormal serum creatinine levels. Group 3 included 20 subjects with abnormal serum creatinine levels and no evidence of gout. All patients received EDTA mobilization tests and 72 h urine collections. The total amount of lead excreted over 72 h was estimated as the body lead stores. An ANOVA test with Fisher pairwise least significant difference, correlation coefficients, and multiple linear regression test were used to measure any statistical significance among these variables. A p value $<$ 0.05 was considered significant. **RESULTS.** Lead stores and serum urate were significantly higher in gouty patients with renal insufficiency than those of other groups, but the urate excretion of gouty patients was not relatively increased. Not only was there a significant correlation between creatinine clearance and urate excretion, but body lead stores also appeared to be negatively related to urate excretion in our patients, even though body lead stores in these subjects were within the normal range. **CONCLUSION.** Our findings suggest that lead may play a role in gouty patients with impaired renal function and chronic low level environmental lead exposure may subtly affect urate excretion in patients with chronic renal disease. Blood lead levels--United States, 1988-1991. Anonymous *MMWR Morb Mortal Wkly Rep*, 43: 30, 1994 Aug 5, 545-8 Since the late 1970s, ongoing contamination of the U.S. environment by lead has been substantially reduced as major uses of lead in house paint, gasoline, water-distribution systems, and food cans have been eliminated or reduced (1). During the 1980s, blood lead data from both selected populations and convenience samples indicated a continuation of the decline in blood lead levels (BLLs) (2) observed during 1976-1980 during the Second National Health and Nutrition Examination Survey (NHANES II) (3). However, research during the past two decades has demonstrated adverse health effects at BLLs previously considered to be safe (1). This report summarizes estimates of BLLs in the U.S. population from Phase 1 of the Third National Health and Nutrition Examination Survey (NHANES III), compares these estimates to those from NHANES II, and examines demographic patterns of BLLs among children aged 1-5 years (4,5). [Indoor air pollution and health: study of various problems] Title Pollution de l'air à l'intérieur des locaux et santé: Étude de quelques problèmes. *Bull Acad Natl Med*, 178: 1, 1994 Jan, 57-66; discussion 67-71 Human beings are living between 70 and 90% inside of premises, where numerous air pollutants are existing: some of them have outdoor sources (industry, domestic burning, car traffic), some are produced indoors by human activities and equipment, by animals, or by various materials, products and furniture. According to their nature, they are listed as biological, physical or chemical pollutants. About health, serious poisonings and acute effects attributed to indoor air pollutants, and even short term effects (like sick building syndrome, infectious illness, pneumopathies, ...), can be relatively easy to distinguish. Inversely the involvement of these pollutants in long term effects (like chronic bronchitis, asthma, cancers, ...) is more difficult to establish. During the last 15 years we carried out several studies, which allowed us to separate the chemical air contaminants into two categories: those produced outdoors (sulphur dioxide, lead, chromium, nickel, nitrates), of whom we calculated the penetration coefficients, and those from both origin, outside and inside (nitrogen oxides, carbon monoxide, ammonia, aldehydes, particles, cadmium, vanadium, sulphates, ammonium

salts). Aldehydes, which present important health risks, were especially investigated: in an office where several cigarettes were burning the measured concentrations were high in comparison with the threshold values existing in some foreign countries; in a cafeteria they were relatively low. To estimate the impregnation of non smokers by environmental tobacco smoke, we also determined, during same spaces of time, on the one hand nicotine in air, on the other hand nicotine and its metabolites excreted in the urine of exposed people. We thus observed that, in "real" situations, this impregnation is as a general rule extremely low. [Biological monitoring of lead in the study of urban pollution due to automobile traffic] Title Monitoraggio biologico del piombo nello studio dell'inquinamento urbano da traffico veicolare. Bavazzano P; Cotti G Epidemiol Prev, 18:1994 Mar, 27-34 The Authors have reviewed the most important literature available on the determination of blood lead level in non-occupationally exposed subjects, children and groups exposed to vehicular traffic (i.e. policemen, bus drivers, etc.). They have also collected data concerning lead concentration in air (mcg/m3) and in gasoline (g/l). The results show that the gradual decrease of gasoline lead concentrations gives a consistent decrease of blood lead level in the general population. In Italy, in the nonoccupationally exposed subjects, the mean blood lead level in 1974 was 32 mcg/dl and in 1991 was 8,4 mcg/dl. The mean value in children is presently about 8,3 mcg/dl. The values in workers exposed to vehicular traffic are higher than those found in non-exposed population. [Basic aspects of public health surveillance for the 90s] Title Aspectos básicos de la vigilancia en salud pública para los años noventa. Sepúlveda J; Lázaro Pérez-Cervantes M; Frenk J; Gómez de León J; Lezana-Fernández MA; Santos-Burgoa C Instituto Nacional de Salud Pública, Cuernavaca, México. Salud Publica Mex, 36: 1, 1994 Jan-Feb, 70-82 In this paper we propose a wider scope for public health surveillance in order to incorporate demographic and health systems monitoring along with activities conventionally associated with epidemiologic surveillance. This new conception stems, in turn, from a revised definition of public health, which describes--not a sector of activity or a type of health service--but a level of aggregation based on the population at large. In our review of the ideas that lead to the institutionalization of health surveillance, we stress the broad concepts developed by such pioneers as Graunt and Petty. Their original concepts emerged from their active concerns for the public's health at a time when no scientific theory of contagion was available--let alone any knowledge about how to treat persons for the major diseases that affected them. Later on, and largely as the result of impressive advances in biomedical knowledge, surveillance activities tended to specialize and to concentrate predominantly on disease outbreaks and on salient adverse health conditions. Health surveillance became closely associated with epidemiologic surveillance, which in turn became associated with the ability to respond promptly to adverse health outcomes. Recently, we have witnessed a gradual broadening of both the concepts and the practice of health surveillance. Paradoxically, the newer proposals tend to recapture part of the spirit and scope of earlier definitions, prompted perhaps by such thoughtful historic parallels as the newly emerging health problems for which we have no clear-cut solution. If one element has to be stressed to promote the objectives of health surveillance today, it is the need to anticipate health outcomes and not just respond to them. This, in turn, requires an increased attention to the surveillance of risk

factors, and a greater understanding of the complex causal relationships that those factors--including behavioral, lifestyle, and environmental ones--with adverse health outcomes and disability. Needless to say that, the first and foremost aim of health care--and of modern surveillance--is to promote the well-being of individuals by improving their health. [Comparison of the body burden of the population of Leipzig and Munich with the heavy metals cadmium, lead and mercury--a study of human organ samples] Original Title Vergleich der Belastung der Bevölkerung im Leipziger und MÜNCHNER Raum mit den Schwermetallen Cadmium, Blei und Quecksilber--eine Untersuchung an menschlichem Organmaterial. Drasch G; MÄLLER RK; Grasemann F; Adang M; Roeder G; Wowra D Institut für Rechtsmedizin, Universität zu Köln, Gesundheitswesen, 56: 5, 1994 May, 263-7 In the former GDR it was almost impossible to perform studies on environmental pollution. Therefore, a short time after the opening of the German interior border the authors started an investigation on the heavy metal burden of humans in the former District of Leipzig (Saxonia). In 1990/91 tissues from 57 deceased were collected from this region. The concentrations of cadmium were determined in specimens from the liver and renal cortex, of mercury in liver, renal cortex and grey matter of the cerebrum and of lead in samples of the pelvic bone and the cortical part of the femur. After sample pretreatment, the heavy metal concentrations were determined by GF-AAS or CV-AAS. The results were compared with studies recently performed by the authors in the region of Munich (southern Bavaria, FRG) and with values from the literature. It was found that the burden with cadmium was similar in both regions, whereas on the average, the bone lead concentrations in Leipzig were 10 times (!) higher than in Munich. Considering dental amalgam as main factor for the burdening with inorganic mercury, the mercury concentrations in the liver and the renal cortex were of the same order of magnitude in both regions. In contrast to this, significantly higher mercury concentrations were found in the brain samples from Leipzig than from Munich. Possible negative health effects of these elevated lead and mercury burden in the Leipzig area are discussed. Exposure to lead and specific attentional problems in schoolchildren. Minder B; Das-Smaal EA; Brand EF; Orlebeke JF Department of Physiological Psychology, Vrije Universiteit of Amsterdam, The Netherlands. J Learn Disabil, 27: 6, 1994 Jun-Jul, 393-9 A pilot study was carried out to investigate the relationship between exposure to lead and attention in children. The participants were 43 boys, 8 to 12 years of age, attending special schools for children with educational and/or learning problems (so called LOM schools). Children with probable causes of attentional or memory problems other than lead contamination were excluded from the study. Various aspects of attention were measured using neuropsychological tests. As an assessment of body lead burden, lead concentration in the boys' hair was measured by means of the Synchrotron Radiation-Induced X-ray Fluorescence technique (SXRF). Information was collected about variables that possibly could influence attention and/or body lead burden (confounding factors). A multiple regression analysis was used to determine the contribution of lead to variance in performance, after correction for confounding factors. The results showed that children with relatively high concentrations of lead in their hair reacted significantly slower in a simple reaction-time task than did children with relatively low concentrations of lead in their hair. In addition, the former were significantly less flexible in changing their focus of attention, even after correction for the influence of their delayed reaction time.

000474

Immunotoxicity of particulate lead: in vitro exposure alters pulmonary macrophage tumor necrosis factor production and activity. Cohen MD; Yang Z; Zelikoff JT Department of Environmental Medicine, New York University Medical Center, Tuxedo 10987. J Toxicol Environ Health, 42: 4, 1994 Aug, 377-92 Rabbit pulmonary macrophages were exposed in vitro to particulate lead oxide (PbO) for periods of up to 72 h and then assayed for the activity of tumor necrosis factor-alpha (TNF alpha) released after stimulation with lipopolysaccharide (LPS). The levels of TNF alpha obtained from PbO-treated cells were decreased in a dose-dependent manner as compared with metal-free control cells for each time point examined. Cells treated simultaneously with both LPS and PbO yielded less monokine than did cells receiving LPS alone. In addition, incubation of cell-free TNF alpha with PbO resulted in a diminution of cytotoxicity directed against TNF alpha-sensitive tumor target cells. Macrophage burdens of PbO particles increased with both the length of incubation and concentration of PbO used; increases in cellular lead burdens were paralleled by reductions in cell viability. Thus, under in vitro conditions, PbO affects the levels of the immunoregulatory monokine TNF alpha and also disrupts its cytotoxic properties after release from activated macrophages. Clean-up of lead in household carpet and floor dust. Ewers L; Clark S; Menrath W; Succop P; Bornschein R Department of Environmental Health, University of Cincinnati, OH 45267-0056. Am Ind Hyg Assoc J, 55: 7, 1994 Jul, 650-7 Methods to remove lead-containing dust were tested on carpets from homes of children with high blood lead and on new carpets artificially contaminated in the laboratory. The household carpets could not be cleaned effectively by repetitive vacuuming with HEPA-filtered cleaners. The lead concentration in the removed dust remained about the same from the initial cleaning (1 min/m2) to the final cleaning (total cleaning time of 10 min/m2). The lead loading on the surface of the carpets often increased during cleaning because vacuuming brought lead from deeper in the carpet to the surface. Over 95% of the total dust was removed from bare wooden floors by dry vacuuming (5 min/m2). For linoleum, more than 75% was removed by vacuuming for 5 min/m2. However, little was removed in vacuuming after the initial two minutes and about 20% was removed in a final wet-washing step. HEPA-vacuuming of the laboratory-contaminated carpets revealed that two of the commercially available vacuum cleaners tested were essentially equivalent and each removed significantly more dust than a third vacuum during a total cleaning time of 10 min/m2. Cleaning for 6 min/m2 was necessary to remove more than 70% of the embedded dust by the two more efficient vacuums. Cleaning efficiencies were about the same for short pile and sculptured carpets. It was concluded that it may be more practical to replace rather than clean carpets. HEPA-vacuum cleaning of carpets was shown to increase lead dust on the surface under some conditions. The longer-term effectiveness of residential lead paint abatement. Farfel MR; Chisolm JJ Jr; Rohde CA Kennedy Krieger Institute, Baltimore, Maryland 21205. Environ Res, 66: 2, 1994 Aug, 217-21 Residential lead-based paint and settled dust are important sources of lead exposure in U.S. children. Scant information exists on the long-term effectiveness of alternative lead abatement practices. In this extended (1.5-3.5 years) follow-up study of comprehensive abatement, 179 wipe dust samples were collected in 13 occupied dwellings for which pre- and immediately postabatement (clearance) dust lead data were available. Dust lead loadings (mg/m2) 1.5 to 3.5 years postabatement were 16, 10, and 4% of preabatement levels for floors, window sills, and window wells, respectively. Furthermore,

78% of readings remained within Maryland's interim clearance standards, indicating that sustained reductions of dust lead hazards were achieved in comprehensively abated dwellings located in older unabated housing areas. (Current diagnosis and treatment of lead poisoning) Title Diagnostic et traitements actuels du saturnisme. Klein M; Kaminsky P; Duc ML; Duc M Service de mÃ©decine J. CHRU de Nancy, hÃ¢pital de Brabois, Vandoeuvre-lÃ©s-Nancy, France. Rev Med Interne, 15: 2, 1994 Feb, 101-9 Lead may be an industrial and an environmental hazard which becomes of greater importance every year. Classical symptoms of plumbism are rare, whenever minor clinical signs increase in frequency. Erythrocyte zinc protoporphyrin and delta-aminolaevulinic acid dehydratase are reliable indicators of the importance of the lead poisoning in individuals. The concentration of lead in blood is also a suitable biological indicator as is EDTA mobilization test. The treatment is based on the use of chelating agents such as calcium EDTA or DMSA, but the only solution is reduction or removal of the sources of lead exposure. A pilot study of lead and cadmium exposure in young children in Stockholm, Sweden: methodological considerations using capillary blood microsampling. Årglund M; Lind B; Lanner Å; Vahter M Institute of Environmental Medicine, Karolinska Institute, Stockholm, Sweden. Arch Environ Contam Toxicol, 27: 2, 1994 Aug, 281-7 A capillary blood microsampling technique was tested among urban young children in Stockholm. Blood lead (BPb) and hemoglobin (Hb) concentrations were determined in capillary blood obtained by fingerstick from 41 children, 13-20 months old, and the accompanying parent. The quality control included control for lead (Pb) and cadmium (Cd) contamination of material and equipment used for blood sampling, washing procedures for the hands and fingers to be punctured, comparisons of Pb and Cd concentrations in blood obtained by fingerstick and by brachial vein puncture from the same individuals, analysis of external quality control samples for Pb and Cd in blood together with the collected samples, and evaluation of the analytical performance using linear regression analysis. The results showed that blood sampling material may contaminate the blood samples with amounts of Pb and Cd that would seriously influence the monitoring results in the low concentration range (< 100 micrograms Pb/L and < 1 microgram Cd/L). However, it is possible to obtain reliable BPb concentrations (> 10 micrograms Pb/L), but not BCD concentrations (< 1 microgram Cd/L), with the capillary blood microsampling technique tested provided that a strict quality control is applied. The sampling procedure tested was well accepted by the children and their parents. The children's median BPb concentration (27 micrograms/L; range 9-73 micrograms/L) was similar to the median BPb concentration of their parents (27 micrograms/L; range 7-74 micrograms/L). However, the correlation between child and parent BPb concentrations was poor (R2 = 0.20), which may indicate different sources to Pb exposure in children and parents. Taking the lead in environmental health: defining a model for practice. Salazar MK; Primomo J AAOHN J, 42: 7, 1994 Jul, 317-24 1. The link between the environment and health has become increasingly evident during the last half of this century. 2. The concept of environment has been central to nursing practice since its origins; however, nursing's description of this concept has varied over the years. Occupational health nurses tend to place more emphasis on environmental aspects of health and safety than other nursing specialists. 3. An ecological systems model provides a convenient framework for describing the interrelationships and interactions that exist in the various levels of

000475

environmental systems. 4. This model can serve as means to guide the development of primary, secondary, and tertiary preventive strategies to address environmental and occupational health problems. Lead debate goes on [letter; comment] Chisholm J; Goldstein G; Cory-Slechta D; Weiss B; Landrigan P; Mushak P; Needleman HL; Rice D; Rosen J; Silbergeld E Pediatrics, 94: 3, 1994 Sep, 408-10 Abstract not available online. [Lead poisoning in pregnancy] Title Saturnisme au cours de la grossesse. Klein M; Kaminsky P; Barb   A F; Duc M Service de M  decine J, H  pital de Brabois, CHRU de Nancy, Vandoeuvre-l  s-Nancy. Presse Med, 23: 12, 1994 Mar 26, 576-80 Endemic areas of lead poisoning have recently been rediscovered raising an important public health problem, particularly for pregnant women and their offspring. Theoretically, pregnant women can no longer be exposed to occupational sources with the application of public health regulations but other sources including water contamination, wall paint, industrial wastes and automobile exhaust fumes cannot be ignored. The placental barrier is permeable to free serum lead and levels in cord blood reaches 5 to 10% of the maternal blood level. In addition, lead may be released from maternal bone reserves during pregnancy and thus become a major source of intoxication for the fetus. Lead content in fetal organs increases with gestational age and may affect the nervous system and calcium dependent organs. Moderate lead levels of 100 micrograms/L can inhibit fetal haeme and   rythropoiesis. Besides the classical signs of lead poisoning, pregnant women risk spontaneous abortion and increased blood pressure. Manifestations in the fetus and newborn include prematurity, fetal hypotrophy and malformations. Other manifestations are not seen until several years after birth and include retarded mental development and muscular and behaviour disorders. Diagnosis is based on screening tests which should be used in cases of suspected accidental or environmental intoxication. Tests should include assay of zinc protoporphyrins and aminolevulinic acid dehydrase. A search for the source of the contamination should be undertaken when blood levels above 250 micrograms/L are observed. Treatment with metal chelators is not recommendable (except in extreme life-threatening cases) during pregnancy due to their teratogenic effect. Prevention is the only adequate Tooth lead levels and IQ in school-age children: the Port Pirie Cohort Study. McMichael AJ; Baghurst PA; Vimpani GV; Wigg NR; Robertson EF; Tong S Department of Community Medicine, Medical School, University of Adelaide, Australia. Am J Epidemiol, 140: 6, 1994 Sep 15, 489-99 The relation between lead concentration in deciduous central upper incisor teeth and intellectual functioning was examined in 262 children who were followed from birth to age 7 years in the lead smelter town of Port Pirie, South Australia, and its environs. Intellectual functioning of the children was assessed over the 3-year period from 1986 to 1989 with the revised Wechsler Intelligence Scale for Children (WISC-R) while each child was in his or her eighth year. There was an inverse relation between tooth lead concentration and intellectual development; the intelligence quotient declined by 2.6 points (90% confidence interval (CI) 0.13-4.9) for each natural-log unit increase in tooth lead concentration, expressed in parts per million. Some WISC-R subscales were more strongly associated with lead exposure than others. In particular, tooth lead was significantly negatively associated with scores for the "Block Design" test (partial regression coefficient -1.25 points per unit of natural-log tooth lead; 90% CI -0.61 to -1.89). No statistically significant interaction between a child's sex and tooth lead concentration was found for the WISC-R

scales. These findings are in agreement with previously published results from this cohort for which serial blood lead concentrations were used to estimate lifetime lead burden. Exposure assessment in epidemiologic studies of birth defects by industrial hygiene review of maternal interviews. Katz EA; Shaw GM; Schaffer DM California Birth Defects Monitoring Program, Emeryville 94608. Am J Ind Med, 26: 1, 1994 Jul, 1-11 In epidemiologic studies of birth defects, occupational titles have frequently been used as surrogates for exposure. To avoid the error associated with such proxy exposure measures, we have designed a process in which an industrial hygienist systematically imputes exposures derived from maternal interviews. In response to a structured questionnaire, mothers of cases and controls recalled occupational and nonoccupational tasks performed or products used around the time of conception. Maternal exposures were then assigned to several a priori defined categories by an industrial hygienist. The central exposure category consists of 74 chemical families, e.g., alcohols, lead compounds. Other exposure categories are individual chemical compounds; nonchemical agents, e.g., ionizing radiation, infectious diseases; and product end-use categories, e.g., insecticides, combustion products. A detailed description of this approach and its exposure assessment potential is presented using exposure data from 220 maternal interviews. Complications of pregnancy in relation to maternal lipid peroxides, glutathione, and exposure to metals. Tabacova S; Little RE; Balabaeva L; Pavlova S; Petrov I National Center of Hygiene, Ecology, and Nutrition, Sofia, Bulgaria. Reprod Toxicol, 8: 3, 1994 May-Jun, 217-24 Lipid peroxides, glutathione, and metals (lead, cadmium, and arsenic) were measured in pregnant women residing in the vicinity of a copper smelter. A diagnosis of pregnancy complications experienced by each woman was made on the basis of interview and clinical record. Patients were assigned to groups of normal or pathologic pregnancies (threatened spontaneous abortion, toxemia, and anemia) according to this diagnosis. Biochemical changes suggestive of increased lipid peroxidation and decreased antioxidant protection (involving the reduced: oxidized glutathione balance) were found in the diagnostic groups of pregnancy complications. These changes were independent of measured maternal variables. Maternal exposure to metals (as indicated by blood lead and cadmium) was associated with a decrease in reduced glutathione in blood. Since increased lipid peroxidation has been implicated in other studies as a pathogenetic factor for maternal toxemia, it is suggested that exposure to metals during gestation could enhance the development of pregnancy complications by increasing lipid peroxidation via depletion of reduced glutathione reserves. [Values of peak expiratory flow in children of school age with biochemical indices of lead intoxication]    (SL   Original Title Wartosci szczytowego przeplywu wydechowego u dzieci w wieku szkolnym z biochemicznymiintoksykacji olowiowej. Sada-Cieslar M; Mazur B IV Katedry i Kliniki Pediatri Slaskiej AM w Chorzowie. Pneumonol Alergol Pol, 62: 1-2, 1994, 29-34 The study was carried out on 541 school children in region with heavy metals air pollution and on 530 children as a control group from free of pollution area. A special attention was layed upon lead intoxication influence on values of PEF. The decrease of PEF values in children in polluted region was documented and suggested close link with lead intoxication. Environmental change in refugee-affected areas of the Third World: the role of policy and research. Black R Department of Geography, King's College London, Strand, U.K. Disasters, 18: 2, 1994 Jun, 107-16 This paper

000476

reviews the current nature of policy responses to environmental change in refugee assistance programmes. Based on a review of existing documentary material and a survey of UK-based NGOs, it is suggested that although refugee assistance agencies are aware of environmental issues, this is rarely translated into effective policy measures to identify and combat environmental degradation. Various existing methods used to calculate environmental impacts are considered, but a number of pitfalls are identified. It is suggested that little is known about the processes that lead to accelerated environmental change in situations of forced displacement, and that research providing deeper understanding of local environments and resource management systems is required for environmental policies to be effective. Non-occupational lead exposure and hypertension in northern Italy. Micciolo R; Canal L; Maranelli G; Apostoli P Istituto di Statistica e Ricerca Operativa, Università di Trento, Italy. Int J Epidemiol, 23: 2, 1994 Apr, 312-20

BACKGROUND. Previous research has addressed the issue that low-level blood lead concentration could be associated with an increased risk of hypertension. METHODS. This paper examines the cross-sectional association between blood lead and hypertension in 630 adult males not employed in activities characterized by specific exposure to lead and living in two Northern Italian cities (Verona and Brescia). The participants, aged 26-69 years, constituted a random sample of the patients in the practice of a general practitioner (Verona) and of regular blood donors (Brescia). Logistic regression analysis was used to evaluate the effects of selected variables (blood lead, blood cadmium, zinc erythroprotoporphyrin, haemoglobin, whole blood viscosity, age, body mass index, smoking habits and alcohol consumption) on the probability of being hypertensive. RESULTS. The blood lead concentration (range: 4.3-46.9 micrograms/dl; median: 14.8 micrograms/dl) was very similar in the two samples, whereas the prevalence of hypertension was significantly higher in the Verona sample than in the Brescia sample (20.4% versus 8.3%). Hypertensive subjects showed significantly higher blood lead levels than normotensive ones. In a preliminary (univariate) analysis blood lead levels, body mass index (BMI) and age were each significantly related to the prevalence of hypertension. After adjusting for age and/or BMI, statistical significance of the relationship between blood lead and hypertension was lost. CONCLUSIONS. The present study showed that blood lead is weakly related to hypertension in non-occupationally exposed men. The statistical significance of this association disappeared when age and BMI were used to make adjustments. The biochemical and clinical consequences of lead poisoning. al-Saleh IA 0 -6

Address King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia. Med Res Rev, 14: 4, 1994 Jul, 415-86 Abstract not available online. of Publication English

Hand dominance and bilateral asymmetry in the structure of the second metacarpal. Roy TA; Ruff CB; Plato CC Gerontology Research Center, National Institute on Aging, National Institutes of Health, Baltimore, Maryland 21224. Am J Phys Anthropol, 94: 2, 1994 Jun, 203-11

Bilateral asymmetry in the structure of the second metacarpal was examined in relation to functional hand dominance in a large, clinically nonselected, healthy population sample from the Baltimore Longitudinal Study of Aging. Bilateral bone measurements were made from anteroposterior hand radiographs of a total of 992 individuals, 609 males and 383 females, with an age range of 19-94 years. Hand dominance was determined on the basis of personal impression. Total width and medullary width at the midshaft of the second metacarpal were

measured to 0.05 mm using a Helios caliper. These two measurements were used to derive cortical thickness, cortical bone area, periosteal (total) area, medullary area, percent cortical area, and the second moment of area in the mediolateral plane. In both right and left-handed individuals, statistically significant side differences were found in the calculated bone areas and the second moment of area, with the dominant hand being larger. Cortical thickness did not show significant side-related differences for either handedness. These results show that functional handedness leads to periosteal and endosteal expansion of the second metacarpal cortex on the dominant side, increasing bone strength without increasing cortical thickness. This is the first time this pattern of asymmetry has been reported in left-handers as well as right-handers. Our results argue for the primacy of environmental (mechanical) effects in determining bilateral asymmetry of limb bone structural properties. From the Centers for Disease Control and Prevention. Blood lead levels--United States, 1988-1991. Anonymous JAMA, 272: 13, 1994 Oct 5, 999 Abstract not available online. Lead on the range [see comments] Ozonoff D Department of Environmental Health, Boston University School of Public Health, MA. Lancet, 343: 8888, 1994 Jan 1, 6-7 Abstract not available online. Inhibition by lead of the calcium plateau current at mouse motor nerve endings. Wiegand H; Heck M; Gotzsch U 0 0 (\$# 0address Medical Institute of Environmental Hygiene, Heinrich-Heine-University D4G Asseltdorf, Department of Neurotoxicology, Germany. Neuroreport, 5: 11, 1994 Jun 27, 1369-72 (U cat; A; lica) The inhibition by lead of motor terminal calcium plateau signals has been studied using extracellular, perineuronal electrodes applied to the M. triangularis sterni preparation of the mouse. The long-lasting calcium plateau signal induced by 3,4-DAP (250 μ mol) and TEA (10 mmol) blockade of presynaptic potassium channels was irreversibly blocked by micromolar lead concentrations in a concentration-dependent manner. These results suggest that lead antagonizes neuronal calcium channels involved in transmitter release from motor nerve terminals. Effect of environmental exposures to lead and cadmium on human lymphocytic detoxifying enzymes. D'Souza SJ; Narurkar LM; Narurkar MV Radiation Biology and Biochemistry Division, Bhabha Atomic Research Centre, Trombay, Bombay, India. Bull Environ Contam Toxicol, 53: 3, 1994 Sep, 458-63 Abstract not available online. 0 " -7 <.<.<0 0 a+d " 0@Title The effect of combined exposure to lead and cadmium on the concentration of zinc and copper in rat tissues. Skoczynska A; Smolik R; Milian A Department of Internal and Occupational Medicine, Medical Academy, Wroclaw, Poland. Int J Occup Med Environ Health, 7: 1, 1994, 41-9

To learn whether a combined exposure to lead and copper provokes disturbances in essential trace elements homeostasis the distribution of zinc and copper in tissues (blood, liver, kidney, heart and brain) after combined and single exposure to lead and/or cadmium was compared. In the same regimen, single or combined exposure accumulation of cadmium and lead in tissues was also measured. Experiments were performed on male Buffalo rats, 5-6 weeks old. Lead acetate (70 mg Pb/kg body wt twice a week) and cadmium chlorate (20 mg Cd/kg body wt once a week) were administered intragastrically for 7 weeks singly or in combination. During the experiment no clinical signs of toxic effect of lead or cadmium were observed. The animals were killed after administration of the last doses of cadmium and/or lead and the level of trace and heavy metals in tissues were measured. The results of this study shows that changes in the copper and zinc concentrations in tissues in the combined exposure to lead and cadmium

000477

are similar to those induced by a single lead (heart and brain) or single cadmium (liver and kidney) intoxication. Lead and cadmium concentrations in the liver and kidneys of rats administered with Pb and Cd jointly were significantly lower than those in rats exposed to single doses of Pb or Cd. Lead in the environment [editorial; comment] Lees RE; Langlois PH Can J Public Health, 85: 3, 1994 May-Jun, 150-3 Abstract not available online. Trace element analysis of soils collected near a lead/zinc smelter [see comments] Kelly SJ; Hertzman C; Wiens M Division of Occupational and Environmental Health, Faculty of Medicine, University of British Columbia, Vancouver. Can J Public Health, 85: 3, 1994 May-Jun, 156-7 Abstract not available online. Blood lead levels in children living near abandoned metal-recovery plants [see comments] Kosatsky T; Boivin MC Community Health Department, H_Apital Maisonneuve-Rosemont, Montreal, Quebec. Can J Public Health, 85: 3, 1994 May-Jun, 158-62 Following the identification of high levels of lead in the soils of residences near two abandoned Montreal metal-recovery plants, blood lead concentrations were analyzed for children living or cared for in the affected neighbourhood. Overall, the distribution of blood lead levels (geometric mean = .27 mmol/L, range .11-1.01) among the 52 children sampled was similar to those of children of other Quebec localities without known point sources of lead. Nevertheless, multiple regression analysis did suggest a modest influence of the concentration of lead in children's own yards (as measured by actual soil samples or as estimated by a geostatistical modeling procedure) on their blood lead level (.05 mmol/l rise for a 1000 ppm increase in soil lead, 95% C.I. -.01, .11). This estimate of the influence of soil on blood lead is at the lower end of the range reported by others. We suggest that these Montreal results demonstrate the modest effects of lead-contaminated soil when its access is limited by grass cover and/or when the emissions which produced it have ceased. Blood lead levels in Noranda children following removal of smelter-contaminated yard soil. Gagn^À D R^À Agie r^À Agionale de la sant^À et des services sociaux de l'Abitibi-T^À Amiscamingue, Rouyn-Noranda, Qc. Can J Public Health, 85: 3, 1994 May-Jun, 163-6 In 1979, children two to five years of age living in Rouyn-Noranda, QC, in an urban district located within 1 km from a copper smelter had mean (geometric) blood lead levels (BLL) of 21 micrograms/dL. Afterwards, stack emissions were lowered. In 1989, mean (geom.) BLL were reduced to 11 micrograms/dL; 50% of the district children had BLL less than 10 micrograms/dL. In 1990-91, a \$3 million top soil removal operation took place; 0 " -8 <.<.<.< 0 à+Ð " 0G residential lots having more than 500 ppm soil lead were decontaminated. In 1991, BLL were reduced to 7 micrograms/dL; 75% of the children had less than 10 micrograms/dL. Geographic analysis of the 1991 results showed that children with the highest BLL lived nearest to the smelter, where atmospheric dustfall to the ground reached 36 mg/m²/month. Follow-up pediatric blood lead campaigns are planned in 1993 and 1995, to evaluate the effects of an ongoing program for further reduction of atmospheric smelter emissions. Is there a need for systematic blood lead screening in Canadian children? Levallois P; Gaudreault P; Rhainds M; Weber JP D^À Apartement de m^À Àdecine sociale et pr^À Àventive, Facult^À de m^À Àdecine, Universit^À À Laval, Qu^À Àbec. Can J Public Health, 85: 3, 1994 May-Jun, 167-70 Neuropsychological effects occurring in young children exposed to low blood lead levels are now better known. This paper reviews the need to systematically screen for blood lead levels compatible with subclinical lead poisoning in young

Canadian children. Using standard criteria for judging the appropriateness of this measure, the authors found no evidence to support such a practice in Canada. Case-finding is recommended in clinical settings for children with disorders suggestive of lead poisoning, increased lead absorption or exposure to a potential source of lead. A population survey is also recommended in the presence of a well-documented community environmental lead source. There is a need for common protocols across Canada for evaluating and treating children with blood lead levels compatible with subclinical poisoning. Areas of priority research are: the impact of persistent environmental sources of lead such as old paint and lead in water; defining criteria for selective screening; and methods of cost-effective environmental remediation. Lead poisoning--Part I. Incidence, etiology, and toxicokinetics. Philip AT; Gerson B Department of Pathology, VA Medical Center, Boston, Massachusetts. Clin Lab Med, 14: 2, 1994 Jun, 423-44 In summary, we review the recent and not so recent but lesser known information on lead poisoning. We review the incidence of lead poisoning and find that no one is really safe from its effects. We have also examined the many and varied sources of lead poisoning, and critically review the ubiquitous ways in which lead enters the body and is eventually dealt with in the body. Sources of lead exposure in Mexico City. Romieu I; Palazuelos E; Hernandez Avila M; Rios C; Mu^À9 Aoz I; Jimenez C; Cahero G Pan American Center for Human Ecology and Health, Mexico. Environ Health Perspect, 102: 4, 1994 Apr, 384-9 Many countries, including Mexico, are facing a largely unrecognized epidemic of low-level lead poisoning. Mexico is the sixth largest lead-producing country in the world, and 40% of its production is used locally in different industrial processes that cause lead contamination of the environment. The major sources and pathways of lead exposure among the Mexican population are gasoline emissions, lead-glazed ceramics, leaded paint, and lead in canned foods and beverages. In this paper we present evidence for the presence of lead in different environmental media and its impact on blood lead levels of the Mexican population. Although during the last few years important measures have been implemented to decrease lead exposure, our findings suggest that lead poisoning is still an important problem in Mexico. There is an urgent need for regulatory policies that implement stricter control to protect the Mexican population. There is also a need to develop adequate programs to reduce the lead burden and the associated health effects in the population that has been chronically exposed. Environmental neurotoxic illness: research for prevention. Landrigan PJ; Graham DG; Thomas RD Department of Community Medicine, Mount Sinai School of Medicine, New York, NY 10029-6574. Environ Health Perspect, 102 Suppl 2:1994 Jun, 117-20 Recognition of the deleterious neurological effects of chemicals has evolved from anecdotal observation to studies of illness in persons exposed to high doses. Now, the more subtle effects of exposures to environmental neurotoxicants 0 " -9 <.<.<.< 0 à+Ð " 0G are being documented: reduction in intelligence, impairment in reasoning ability, shortening of attention span, and alteration of behavior. Substances to which millions of persons are exposed occupationally and in the general environment that can result in such deficits include lead, organophosphorus pesticides, certain chlorinated hydrocarbons, carbon disulfide, solvents, and mercury. The first step in the prevention of neurological impairments due to environmental exposures is to assess the toxicity of chemicals. Fewer than 10% of the 70,000 chemicals in commercial use have been evaluated for neurotoxicity. This knowledge gap needs to be narrowed by

000478

building on existing systems of toxicity testing. Concurrent with assessment of chemicals will be tiers of in vivo screening tests to measure functional and structural changes following exposures in vitro. Epidemiologic surveillance of populations at high risk will continue to inform on the ranking of suspect or known neurotoxicants. Research and researchers must become more sophisticated in the development and application of refined biologic markers so the findings can be used to detect absorption of toxicants and early neurological or neurobehavioral dysfunction before disability occurs and to protect human health and the environment. Relationship between soil lead, dust lead, and blood lead concentrations in pets and their owners: evaluation of soil lead threshold values. Berny PJ; CÅ= ÅtÅ) Å LM; Buck WB Centre National d'Informations Toxicologiques VÅ) ÅtÅ) Årinaires, Ecole Nationale VÅ) ÅtÅ) Årinaire de Lyon, Marcy l'Etoile, France. Environ Res, 67: 1, 1994 Oct, 84-97 This paper reports the results of a study conducted in Granite City, Illinois during the months of August through October 1991. The study involved a subpopulation of 77 households having 106 dogs and cats which was a corollary to a major study conducted in humans by the Illinois Department of Public Health to evaluate lead exposure. A secondary lead smelter had been in operation in this town for almost 80 years and was shut down in 1982. Important soil contamination with lead was reported and this paper presents data regarding levels of soil and dust lead and associated blood lead concentrations in animals and their owners in a total of 77 households. Overall, blood lead concentrations (BLC) were low (0-13 micrograms/dl in the animal owners; 0-28 micrograms/dl in pets). There was no significant relationship between soil or dust lead and BLC in humans; however, the relationship was significant in animals. Odds ratios were computed to determine whether 500 or 1000 ppm lead in environmental samples was associated with increased risk of having a high BLC. We could not find any increased risk in humans, while the risk did increase in animals. It is concluded that animals are more at risk than their owners of having a high BLC when exposed to the same contaminated environment and can be used to monitor the bioavailability of lead. Changes in external and internal lead load in different working areas of a starter battery production plant in the period 1982 to 1991. Kentner M; Fischer T; Richter G Occupational Medical Service, Robert Bosch GmbH, Hildesheim, Germany. Int Arch Occup Environ Health, 66: 1, 1994, 23-31 Our investigation was based on routine ambient and biological monitoring data in a starter battery production plant from 1982 to 1991. This retrospective longitudinal study included 134 blue collar workers in seven main production areas (casting, lead oxide production, bunker, pasting, formation, plate stacking, assembly). Over the whole period a statistically significant decrease in blood lead concentration in the whole sample, from 48.92 micrograms/dl (1982) to 22.99 micrograms/dl (1991), could be ascertained. This positive trend could also be proven for the most important production areas. The highest internal lead load was present in employees from the formation and adjoining production areas, followed by pasting, casting and assembly. In comparison to other battery factories our results are in the lower range. Furthermore, we carried out a data linkage between air and blood lead concentrations. We were able to demonstrate a decrease in external lead load in most of the production areas, but this reduction was not so distinct as that in the blood lead concentration. These results indicate the efficiency of preventive efforts in technical work protection and especially in intensive medical supervision of the exposed workers. Influencing personal hygienic behaviour and

intervention at blood lead levels of 50 micrograms/dl promises the best success in worker protection. Does lead play a role in the development of renal insufficiency in some patients with essential hypertension? Lin JL; Lim PS Ö " - : <.<.<0 Ø å+D " ÖAddress Division of Nephrology, Chang Gung Memorial Hospital, Taipei, Taiwan, Republic of China. J Hum Hypertens, 8: 7, 1994 Jul, 495-500 The association of excessive lead burden and essential hypertension has been a subject of much dispute. In particular, the potential detrimental effect of low level environmental exposure on BP has caused considerable concern. We studied the urinary excretion of lead following the infusion of EDTA (1 g of calcium disodium edetate) in 12 healthy controls (group I), 10 subjects with essential hypertension alone (Group II) and in 36 subjects with chronic renal insufficiency. Those subjects with renal insufficiency were further divided into three groups: group III, 12 patients with a history of 7-19 years of essential hypertension who subsequently developed into renal failure; group IV, patients with chronic renal failure alone; and group V, patients with chronic renal failure due to causes other than hypertensive nephropathy and associated with secondary hypertension. In comparison with other groups, subjects with hypertensive nephropathy (group III) had significantly elevated lead body burden. In addition, we found that five of the 12 subjects with hypertensive nephropathy had histories of acute gouty attacks after the development of renal function impairment. In conclusion, our observation of a higher EDTA postinfusional urinary lead excretion among some patients with essential hypertension with renal function impairment indicates that lead may play a crucial role in a subgroup of patients with hypertensive nephropathy.


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**COMISION NACIONAL DEL MEDIO AMBIENTE(CONAMA)
UNIDAD DE DESCONTAMINACION, PLANES Y NORMAS**

Con fecha 01 de Junio de 1999 se archivó bajo el número que a continuación se indica el siguiente antecedente para la elaboración de la norma de calidad primaria para plomo en el aire:

7-NOR-3/98: Plomo y Salud, (Dra. Andrea Luna H.)


Patricia Matus C.
Jefe Depto. Descontaminación,
Planes y Normas

COMISION NACIONAL DEL MEDIO AMBIENTE
 DEPTO. DESCONTAMINACION, PLANES Y NORMAS

Reunión Norma Plomo
 Junio 15 de 1999

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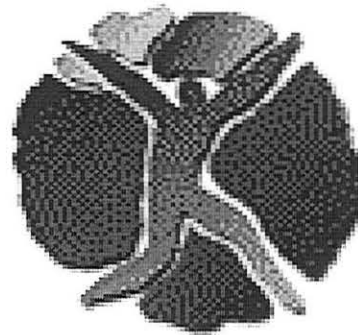
COMISION NACIONAL DEL MEDIO AMBIENTE
 DEPTO. DESCONTAMINACION, PLANES Y NORMAS

Reunión Norma Plomo
 Junio 21 de 1999

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16.	ANDREA ROSA	COMANA			
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PROCESO DE DICTACION
DE LA NORMA
DE CALIDAD PRIMARIA
PARA PLOMO EN EL AIRE



CONAMA
Depto. Descontaminación,
Planes y Normas
1998-1999

000484

NOVEDADES



Novedades

Reuniones realizadas por Grupos de Trabajo

- **7 de junio:**
GT "Plomo en Población"
GT "Plomo en Aire y Metodologías de Medición"
GT "Fiscalización"
- **15 de junio:**
GT "Emisiones de Plomo y Control de Emisiones"
- **17 de junio:**
GT "Normas internacionales"



Novedades

Grupo de Trabajo "FISCALIZACION"

Objetivos Generales:

- Elaborar un sistema de fiscalización de la Norma de Calidad para Plomo en Aire que sirva como modelo para realizar el control por parte del organismo fiscalizador
- Definir los puntos y metodologías a utilizar

Objetivos Específicos:

- Definir criterios técnicos para la fiscalización (lugares de muestreo, número de estaciones, diseño de muestreo, etc.)
- Definir sistema de vigilancia de plomo en personas
- Estimar recursos humanos y técnicos necesarios

Novedades

grupos de trabajo

	mar	abr	may	jun	jul	ago	sep	oct	nov	dic	ene	feb	mar	
GRUPOS DE TRABAJO														
GT Plomo en Población				A		P								P: Producto final
GT Plomo en Aire/Metodología Medición				A	Pm	Pa								A: Avance
GT Emisión de Plomo/Control de Emisiones					A	P								Pm: Metodología Medición
GT Normas Internacionales				A	P									Pa: Aire
GT Fiscalización					A				P					M: Metodología
GT Evaluación Económica							A				P			
GT Valor de Norma/Valores críticos					M			A	P					



000487

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CRONOGRAMAS

proceso de dictación de norma

PROCESO DE DICTACION DE LA NORMA DE CALIDAD PRIMARIA PARA PLOMO EN EL AIRE		nov	dic	ene	feb	mar	abr	may	jun	jul	ago	sep	oct	nov	dic	ene	feb	mar
Se prorroga por	189																	
NORMA																		
Resolución de inicio elaboración anteproyecto	17-Dic-98		17															
Formación de expediente público	17-Dic-98		17															
Publicación en Diario Oficial	29-Dic-98		29															
Publicación en La Nación	26-Dic-98		26															
Recepción de antecedentes	6-Mar-99		26			6												
Etapa de estudios científicos y antecedentes	29-Ago-99																	
Aprobación Anteproyecto	30-Nov-99													30				
Publicación en Diario Oficial	1-Dic-99														1			
Publicación en diario circulación nacional	5-Dic-99														5			
Envío expediente a Consejos Consultivos	2-Dic-99														2			
Etapa análisis técnico y económico	24-Ene-00														5	24		
Observaciones públicas y privadas al anteproyecto	30-Ene-00														1	30		
Análisis de observaciones y proyecto definitivo	15-Mar-00															31		15
Aprobación por Consejo Ministros	30-Mar-00																	30

000489

actividades Comité Operativo y Ampliado

	abr	may	jun	jul	ago	sep	oct	nov
ACTIVIDADES								
Reunión Comité Operativo y Ampliado		10						
Reunión Comité Operativo y Ampliado			21					
Reunión Comité Operativo y Ampliado				26				
Reunión Comité Operativo y Ampliado					30			

Lunes 21 de Junio:

- Presentación Colegio Médico
 - Presentación Avance GT Plomo en Población
 - Presentación Avance GT Plomo en Aire y Metodología de Medición
 - Presentación Avance GT Normas Internacionales
- Panel de discusión

PROXIMOS

~~PROXIMOS~~ PASOS

000491

actividades Comité Operativo y Ampliado

	abr	may	jun	jul	ago	sep	oct	nov
ACTIVIDADES								
Reunión Comité Operativo y Ampliado		10						
Reunión Comité Operativo y Ampliado			21					
Reunión Comité Operativo y Ampliado				26				
Reunión Comité Operativo y Ampliado					30			

Lunes 26 de Julio:

- Presentación Avance GT Emisiones de Plomo y Control de Emisiones
- Presentación Avance GT Fiscalización
- Presentación Final GT Normas Internacionales
- Propuestas de Metodologías para definir el valor de norma



GT

"PLOMO EN AIRE"

CONAMA
SESMA

Servicio de Salud Antofagasta
Servicio de Salud de Valparaíso
Servicio de Salud de Concepción
Intendencia RM
RENACE

000493

000494

СМ-ЗМДМСМ-ЗА





Estudio de calidad de aire en regiones urbanas industriales de Chile (COSUDE)

- Se estudiaron las siguientes cinco ciudades:

Iquique

Valparaíso

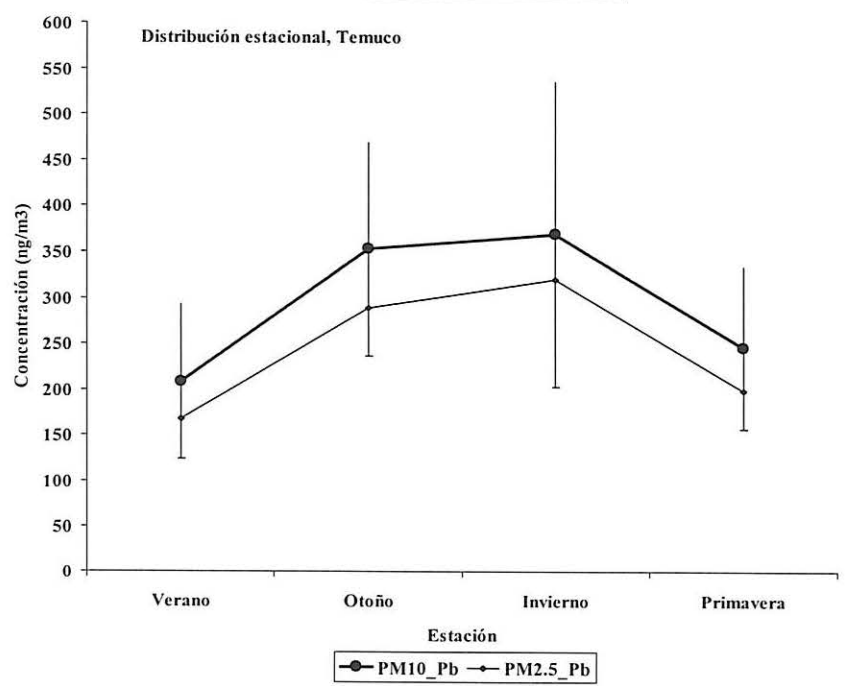
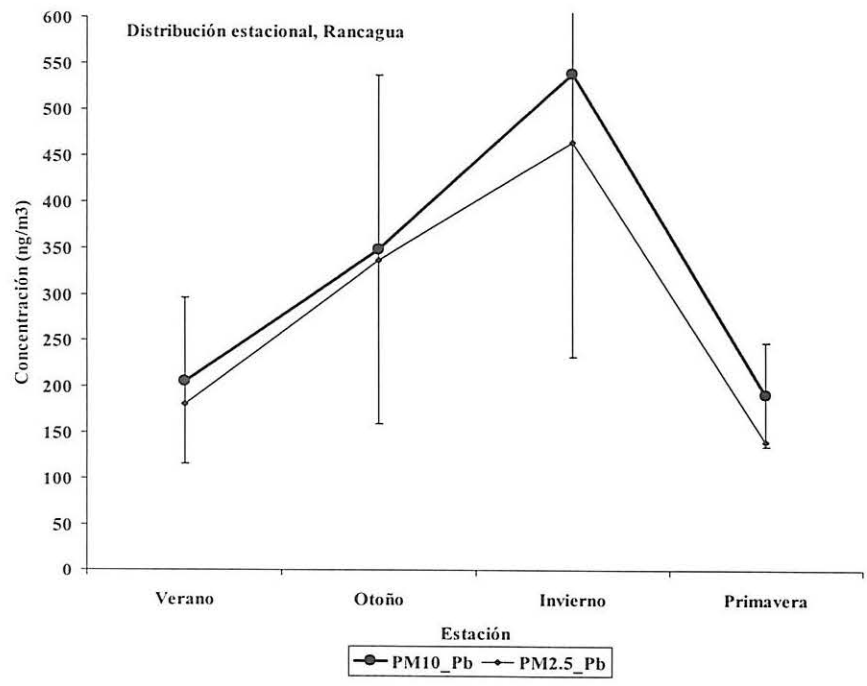
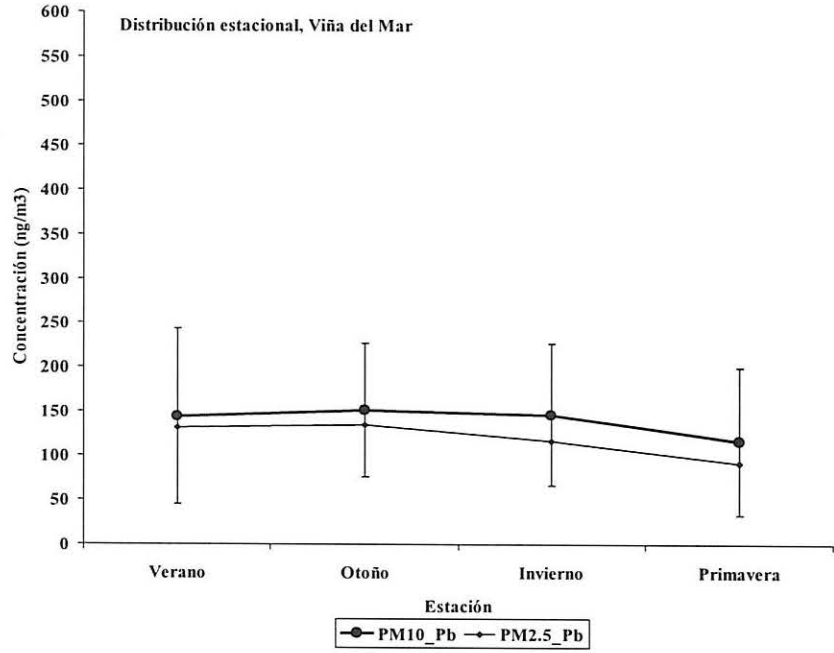
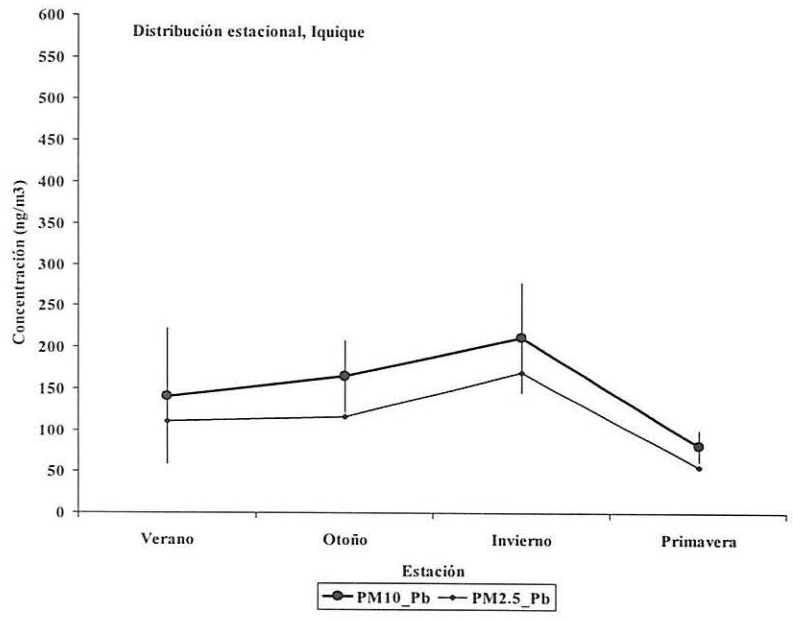
Viña del Mar

Rancagua

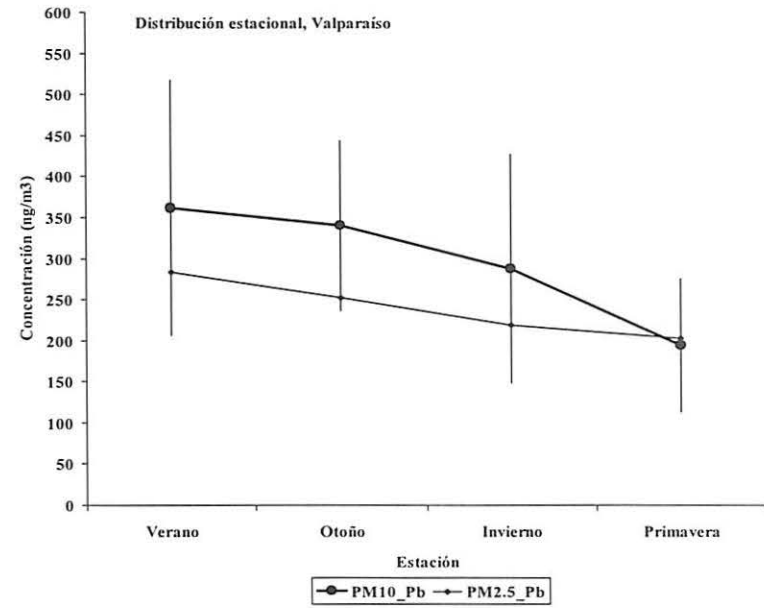
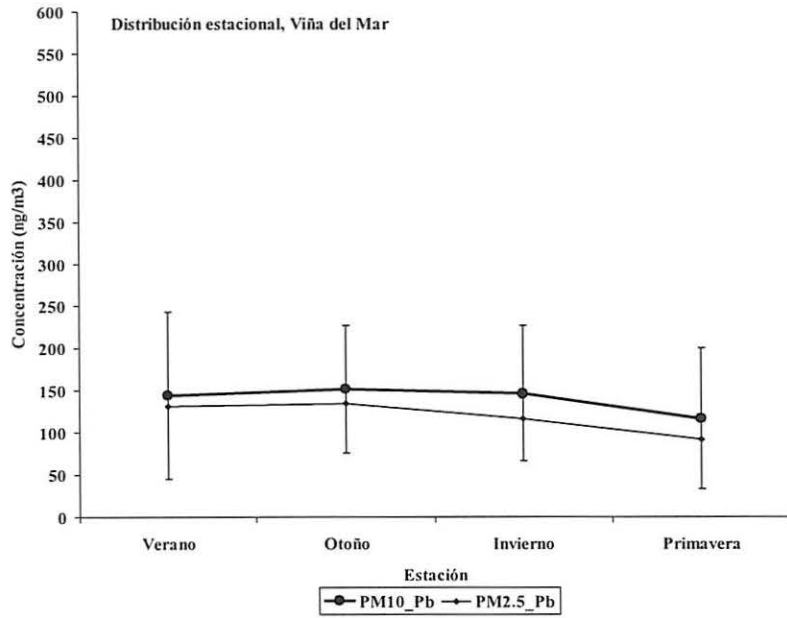
Temuco



- Se midió en 5 puntos de cada ciudad PM-10 y en 1 punto PM2.5
- Se midió material particulado cada 4 días durante 1 año
- Se analizó la distribución espacial y temporal
- Metodología de medición utilizada:
 - Impactadores de Harvard de bajo volumen para colectar PM10 y PM2.5
 - Análisis de 720 muestras con fluorescencia de rayos X



000497





GT
"NORMAS
INTERNACIONALES"

CONAMA
Ministerio de Salud
OPS
RENACE 000499

000500

СМ-ЗМДМОН-ЗА





Organización Mundial de la Salud OMS Recomendación

- 0.5 ug/m³ como promedio anual
- Base: a lo menos el 98% de población expuesta debe tener nivel de plomo en sangre menor a 10 ug/dl
- sobre esta base la media de plomo en sangre no excedería 5.4 ug/dl
- se usó la relación entre plomo en sangre y plomo en aire:
1 ug/m³ de plomo en aire contribuiría a 5 ug/dl de plomo en sangre (así se permiten otras vías de ingreso)
- se supone un máximo nivel no antrópico de plomo en sangre de 3 ug/dl



000502
Información
actualmente
disponible
consiste en:

- País y/o ciudad de la norma
 - América (8 países)
 - Europa (8 países)
 - otros países (8 países)
- Periodo de la norma
 - horaria
 - mensual
 - anual
 - otros
- Valor de la norma ($\mu\text{g}/\text{m}^3$)

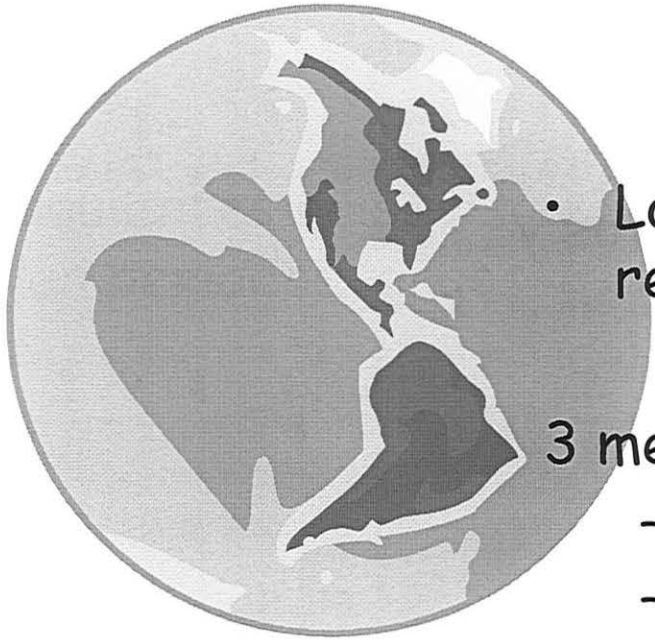


ANALISIS GENERAL

- Los valores y períodos de las normas varían entre los países
- Rango de valores para períodos cortos
 - 30 min.: entre 0,3 ug/m³ y 50ug/m³ (3 países)
 - 8 hrs. : 10 ug/m³ (España)
 - 24 hrs.: entre 0.3 ug/m³ y 15 ug/m³ (12 países)
- Rango de valores para períodos largos
 - mensual: entre 1.5 ug/m³ y 15 ug/m³ (4 países)
 - 3 meses: 1.5 ug/m³ (7 países)
 - anual: entre 0,2 ug/m³ y 2.5 ug/m³ (6 países)



- Los siguientes países sólo regulan períodos cortos (24 horas):
 - Japón
 - Kuwait
 - Tailandia
 - Vietnam
 - Venezuela
 - Argentina: Ciudad de Buenos Aires (también para 30 minutos)



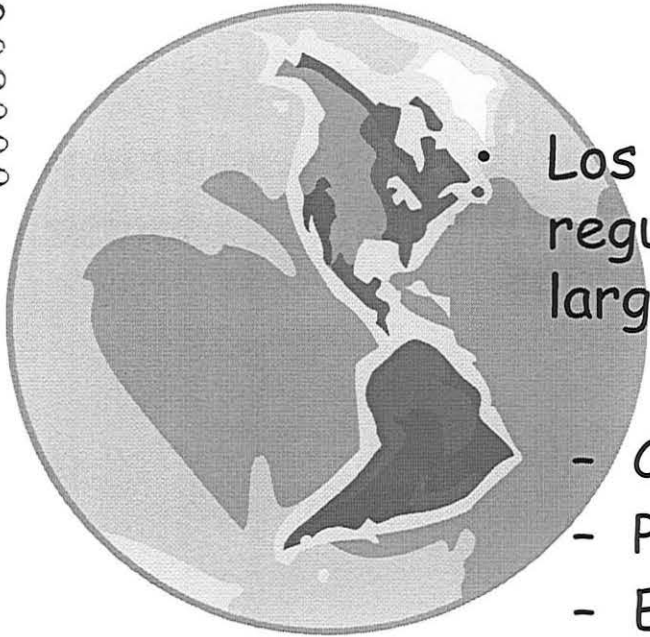
- Los siguientes países sólo regulan períodos largos

3 meses:

- Australia
- Nueva Zelandia
- Bolivia
- Ecuador
- EEUU
- México

1 año

- Alemania
- Grecia
- Reino Unido
- Sudáfrica



Los siguientes países regulan períodos cortos y largos

- Canadá
- Perú
- España
- Hungría
- Países Bajos
- Polonia
- Suiza
- Israel