MEDICAL

Safety assessment of esters of p-hydroxybenzoic acid (parabens)  2
Effect of Heavy Metals on, and Handling by, the Kidney  2
Changes of plasma levels of endothelin and NO in acute organophosphate poisoning patients  3
The mercury was removed and the microelements in human body were retained by compound pellet of soil and gold (CPSG)  3
Phthalate exposure and reproductive hormones in adult men  3
Association Between In Utero Organophosphate Pesticide Exposure and Abnormal Reflexes in Neonates  3
SV40 Enhances the Risk of Malignant Mesothelioma among People Exposed to Asbestos: A Molecular Epidemiologic Case-Control Study  4
Immunogenicity and safety of a combination pneumococcal-meningococcal vaccine in infants. A randomized controlled trial  4
Health effects engineering of coal and biomass combustion particulates: influence of zinc, sulfur and process changes on potential lung injury from inhaled ash  5

Contact us:
chemwatch@chemwatch.net
tel +61 3 9572 4700
fax +61 3 9572 4777

Emergency +61 3 9573 3112
70 Bambra Rd Caulfield North
Victoria 3161 Australia

*While Chemwatch has taken all efforts to ensure the accuracy of information in this publication, it is not intended to be comprehensive or to render advice. Websites rendered are subject to change.
Safety assessment of esters of p-hydroxybenzoic acid (parabens)
2005-08-03
Parabens are widely used as preservatives in food, cosmetic and pharmaceutical products. Acute, subchronic, and chronic studies in rodents indicate that parabens are practically non-toxic. Parabens are rapidly absorbed, metabolized, and excreted. In individuals with normal skin, parabens are, for the most part, non-irritating and non-sensitizing. However, application of compounds containing parabens to damaged or broken skin has resulted in sensitization. Genotoxicity testing of parabens in a variety of in vitro and in vivo studies primarily gave negative results. The paraben structure is not indicative of carcinogenic potential, and experimental studies support these observations.

Some animal studies have reported adverse reproductive effects of parabens. In an uterotrophic assay, Me and Bu paraben administered orally to immature rats were inactive, while s.c. administration of Bu paraben produced a weak positive response. The ability of parabens to transactivate the estrogen receptor in vitro increases with alkyl group size. The detection of parabens in a small number of breast tumor tissue samples and adverse reproductive effects of parabens in animals has provoked controversy over the continued use of these substances. However, the possible estrogenic hazard of parabens on the basis of the available studies is equivocal, and fails to consider the metabolism and elimination rates of parabens, which are dose, route, and species dependent. In light of the recent controversy over the estrogenic potential of parabens, conduct of a reproductive toxicity study may be warranted.

Authors: Soni, M. G.; Carabin, I. G.; Burdock, G. A.
Full source: Food and Chemical Toxicology 2005, 43(7), 985-1015 (Eng)

Effect of Heavy Metals on, and Handling by, the Kidney
2005-08-03
Heavy metals such as Cd, Hg, Pb, Cr, and Pt are a major environmental and occupational hazard. Unfortunately, these non-essential elements are toxic at very low doses and non-biodegradable with a very long biological half-life. Thus, exposure to heavy metals is potentially harmful. Because of its ability to reabsorb and accumulate divalent metals, the kidney is the first target organ of heavy metal toxicity. The extent of renal damage by heavy metals depends on the nature, the dose, route, and duration of exposure. Both acute and chronic intoxication have been demonstrated to cause nephropathies, with various levels of severity ranging from tubular dysfunctions like acquired Fanconi syndrome to severe renal failure leading occasionally to death.

Very varied pathways are involved in the uptake of heavy metals by the epithelium, depending on the form (free or bound) of the metal and the segment of the nephron where reabsorption occurs (proximal tubule, loop of Henle, distal tubule, and terminal segments). In this review, the authors address the putative uptake pathways involved along the nephron, the mechanisms of intracellular sequestration and detoxification, and the nephropathies caused by heavy metals. The authors also tackle the question of the possible therapeutic means of decreasing the toxic effect of heavy metals by increasing their urinary excretion without affecting the renal uptake of essential trace elements. The authors have chosen to focus mainly on Cd, Hg, and Pb and on in vivo studies.

Authors: Barbier, Olivier; Jacquillet, Gregory; Tauc, Michel; Cougnon, Marc; Poujeol, Philippe
Full source: Nephron 2005, 99(4), p105-p110 (Eng)
Changes of plasma levels of endothelin and NO in acute organophosphate poisoning patients
2005-08-03
The changes of plasma levels of endothelin, NO and acetylcholinesterase (AchE) in acute organophosphate poisoning patients (AOPP) and normal people were determined to investigate the mechanism of acute organophosphate. There was no significant difference between AOPP light group and control group. Compared with control group, ET and No in middle and heavy group increased. ET, NO and AchE were positively related, indicating that changes of plasma levels of endothelin and NO in AOPP were related with degree of toxicity and it could be an index for prognosis and toxicity degree.
Authors: Li, Chunfeng; Wang, Jicun; Zhang, Ping; Yang, Yuhai
Full source: Zhongguo Gongye Yixue Zazhi 2004, 17(5), 330-331 (Ch)

The mercury was removed and the microelements in human body were retained by compound pellet of soil and gold (CPSG)
2005-08-03
This study analyzes the changes of essential microelements such as Ca2+, Mg2+, Zn2+, Fe3+ and Cu2+ in the urine after removing the mercury with compound pellet of soil and gold. CPSG can protect the essential microelements in the body and overcome the adverse reaction such as metal complex diseases in the DMPS group.
Authors: Wu, Ping; Du, Su-Fen; Zhang, Zhen-Xia; Wang, Ying; Zhang, Hong; Chai, De-Ling
Full source: Yaoxue Fuwu Yu Yanjiu 2004, 4(4), 342-344 (Ch)

Phthalate exposure and reproductive hormones in adult men
2005-08-03
Phthalates are used in personal and consumer products, food packaging materials, and polyvinyl chloride plastics and have been measured in the majority of the general population of the USA. Consistent experimental evidence shows that some phthalates are developmental and reproductive toxicants in animals. This study explored the association between environmental levels of phthalates and altered reproductive hormone levels in adult men. Although authors found associations between MBP and MBzP urinary concentrations and altered levels of inhibin B and FSH, the hormone concentrations did not change in the expected patterns. Therefore, it is unclear whether these associations represent physiological relevant alterations in these hormones, or whether they represent associations found as a result of conducting multiple comparisons.
Authors: Duty, Susan M.; Calafat, Antonia M.; Silva, Manori J.; Ryan, Louise; Hauser, Russ

Association Between In Utero Organophosphate Pesticide Exposure and Abnormal Reflexes in Neonates
2005-08-03
The detrimental effects of organophosphate pesticide (OP) exposure on neurodevelopment have been shown in animals. The present study aimed...
Medical

to assess the relationship between in utero and early postnatal OP exposure and neonatal neurobehavior in humans, as measured by seven clusters (habitation, orientation, motor performance, range of state, regulation of state, autonomic stability, and reflex) on the Brazelton Neonatal Behavioral Assessment Scale (BNBAS). The authors observed a significant association between exposure and the reflex cluster for the entire sample and for infants >3 days old. Among the >3 day old infants, increasing average prenatal urinary metabolite levels were associated with both an increase in number of abnormal reflexes, and the proportion of infants with more than three abnormal reflexes. No detrimental associations were found between postnatal urinary metabolite levels and any of the BNBAS clusters for infants <=3 or >3 days old at assessment.

Authors: Young, Jessica G.; Eskenazi, Brenda; Gladstone, Eleanor A.; Bradman, Asa; Pedersen, Lesley; Johnson, Caroline; Barr, Dana B.; Furlong, Clement E.; Holland, Nina T.
Full source: Neurotoxicology 2005, 26(2), 199-209 (Eng)

SV40 Enhances the Risk of Malignant Mesothelioma among People Exposed to Asbestos: A Molecular Epidemiologic Case-Control Study

2005-08-03

Authors conducted a case-control study on asbestos exposure and presence of SV40 in tumor samples of malignant mesotheliomas (MMs) and bladder urotheliomas (BUs). PCR analysis revealed the presence of SV40 DNA (SV40+) in eight (42.1%) MMs and 6 (33.3%) BUs. The odds ratio for MM Asb- and SV40+ was 0.4, for Asb+ and SV40- was 3.6, and for Asb+ and SV40+ was 12.6. The results suggest that SV40 increases the risk of MM among individuals exposed to asbestos.

Authors: Cristaudo, Alfonso; Foddis, Rudy; Vivaldi, Agnese; Buselli, Rodolfo; Gattini, Vittorio; Guglielmì, Giovanni; Cosentino, Francesca; Ottenga, Franco; Ciancia, Eugenio; Libener, Roberta; Filiberti, Rosangela; Neri, Monica; Betta, PierGiacomo; Tognon, Mauro; Mutti, Luciano; Puntoni, Riccardo
Full source: Cancer Research 2005, 65(8), 3049-3052 (Eng)

Immunogenicity and safety of a combination pneumococcal-meninccoccal vaccine in infants. A randomized controlled trial

2005-08-03

The aim of this study was to determine the safety and immunogenicity of a combination 9-valent pneumococcal-group C meningococcal conjugate candidate vaccine (Pnc9-MenC) administered as part of the routine UK infant immunization schedule at ages 2, 3, and 4 months. Pnc9-MenC combination vaccine administered to infants at ages 2,3, and 4 months demonstrated reduced group C meningococcal immunogenicity compared with MenC vaccine. The immunogenicity of concomitantly administered Hib and DTwP vaccines was also diminished. The Pnc9-MenC vaccine was safe and immunogenic for all contained pneumococcal serotypes. The reduced MenC immunogenicity may limit the development of the Pnc9-MenC vaccine.

Authors: Buttery, Jim P.; Riddell, Anna; McVernon, Jodie; Chantler, Tracey; Lane, Laura; Bowen-Morris, Jane; Diggle, Linda; Morris, Rhonwen; Harnden, Anthony; Lockhart, Steven; Pollard, Andrew J.; Cartwright, Keith; Moxon, E. Richard
Full source: JAMA, the Journal of the American Medical Association 2005, 293(14), 1751-1758 (Eng)
Health effects engineering of coal and biomass combustion particulates: influence of zinc, sulfur and process changes on potential lung injury from inhaled ash

2005-08-03

This paper is concerned with health effects of the ash aerosol formed from the co-combustion of municipal sewage sludge (a CO₂ neutral, ostensibly ‘green’ biomass fuel) with pulverized coal. Initial results showed that inhalation of ash from the co-combustion of municipal sewage sludge (MSS) and pulverized coal caused much greater lung damage in mice, as measured by lung permeability increase, than that of coal ash, or MSS ash, alone. MSS contains substantial quantities of zinc but little sulfur, while coal contains sulfur but little zinc. Therefore, systematic experiments were conducted to determine the health effects of combustion generated zinc particles and zinc plus sulfur particles. Zinc without sulfur led to ‘normal’ behavior as far as lung permeability was concerned. Zinc with sulfur added led to the ‘abnormal’ behavior noted also in the coal+MSS experiments. Therefore, the bad actor was identified to be zinc together with sulfur, and that was why the co-combustion of coal and MSS caused greater lung injury than the combustion of either fuel alone. Health effects engineering can also be employed to diminish this health risk caused by burning fuels containing both zinc and sulfur. Injection of a kaolinite sorbent downstream of the flame, but above the Zn dew point, can sequester the Zn, and react it to form a new species which was shown to be relatively benign.

Authors: Fernandez, Art; Wendt, Jost O. L.; Witten, Mark L.

Full source: Fuel 2005, 84(10), 1320-1327 (Eng)