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Study on radiation transfer in human skin for cosmetics
2005-12-06
To design cosmetics producing the optical properties that are required for a beautiful skin, the radiation transfer in the skin was numerically studied by the Monte Carlo method and the effects of skin texture and cosmetics on the radiation transfer were empirically studied using an artificial skin. The numerical analysis showed that the total internal reflection suppresses large portion of radiation going out through the skin surface. Additionally, the experimental study revealed that skin texture and cosmetics not only diffusely reflect the incoming radiation, but also lead the internally reflected radiation to the outside of the skin.
Authors: Yamada, Jun; Kawamura, Ayumu; Miura, Yoshimasa; Takata, Sadaki; Ogawa, Katsuki
Full source: Journal of Quantitative Spectroscopy & Radiative Transfer 2005, 93(1-3), 219-230 (Eng)

Safety studies of aceclofenac
2005-12-06
This study assesses the safety profiles of aceclofenac on the nervous, cardiovascular, respiratory and digestive systems in vivo. The mice were randomly i.g. administered with aceclofenac at 5, 15 and 45 mg/kg to evaluate the CNS effects, such as arch behavior, spontaneous activities and induced sleep. Aceclofenac showed a synergism on the sleep induction with pentobarbital sodium at 45 mg/kg. The UD50 for the gastric ulcer induction was 19.9 mg/kg. No other significant effects on CNS, CV, respiratory systems were found. Aceclofenac was no significant toxic to the nervous, cardiovascular, respiratory systems.
Authors: Chen, Qi-you; Zhou, Yi-ping; Yang, Jing-hua; He, Li-hua
Full source: Zhongguo Xinyao Zazhi 2005, 14(6), 708-710 (Ch)

Determination of dioxins in human hair: estimation of external and internal exposure to dioxins
2005-12-06
To clarify the origin of dioxin and related compounds (dioxins) in human hair, the authors determined the amounts of adsorbed dioxins in human hair, and the distribution of 2,3,7,8-tetrachlorodibenzo p-dioxin (TCDD) in rats. Exposure of the hair specimens to ambient air for one day increased the total toxic equivalent (TEQ) value by 51%. In TCDD-treated rats, the amount of TCDD in hair increased in a dose-dependent manner, and showed a significant positive correlation with that in adipose tissue. Human hair was found to retain dioxins by both internal and external exposure, and the contribution of external exposure was estimated to be about 40% of the TEQ.
Authors: Miyabara, Yuichi; Nishimura, Noriko; Tohyama, Chiharu
Full source: Environmental Health and Preventive Medicine 2005, 10(2), 86-93 (Eng)

Acute Inhalational Exposure to Chlorodifluoromethane (Freon-22): A Report of 43 Cases
2005-12-06
The authors report 43 cases of chlorodifluoromethane (Freon-22) intoxication that occurred on August 5, 2003 when a freezer in a seafood factory exploded. In this accident, 80 workers were exposed to Freon-22 gas and 43 workers
developed symptoms and were transferred to 6 hospitals. Neurological symptoms including dizziness, headache, and nausea were most frequently observed (40 of 43 patients).

One patient was comatose but recovered within 1 h with oxygen inhalation. Airway and respiratory symptoms including dysesthesia of the tongue, pharyngitis, and shortness of breath were also frequently observed (26 of 43 patients).

These symptoms disappeared within a few days in all patients. There were no fatalities. Although Freon-22 has been considered to be a chlorofluorocarbon of relatively low toxicity, this incident suggests that potentially significant toxic effects may occur following large exposures.

Authors: Kubota, Takeshi; Miyata, Akimasa
Full source: Clinical Toxicology 2005, 43(4), 305-308 (Eng)

Effects of aging on cadmium and tubular dysfunction markers in urine from adult women in non-polluted areas
2005-12-06

The objectives of the present analyses were to examine if Cd and tubular dysfunction marker levels in urine show age-dependent changes among women who lived in areas with no known cadmium (Cd) pollution in Japan, and if the trends would be further modified by correction of analyte concentration in terms of urinary creatinine (CR or cr) or urine sp. gr. (SG or sg). There were age-related increases in Cd and tubular dysfunction markers in urine among women in areas with no known Cd pollution. The increase was amplified two- or 1.4-times when CR or SG correction was applied, respectively. The observation suggests that care should be practiced in applying CR or SG correction, especially when evaluation of Cd exposure and resulting health effects is made among elderly populations.

Full source: International Archives of Occupational and Environmental Health 2005, 78(6), 446-451 (Eng)

Association of criteria pollutants with plasma hemostatic/inflammatory markers: a population-based study
2005-12-06

To elucidate the health effects of air pollution, the short-term association of criteria pollutants with hemostatic and inflammatory markers were examined using a population-based sample of 10,208 middle-age males and females of the biracial cohort of Atherosclerosis Risk in Communities (ARIC) study. This population-based study suggest that the hemostasis/inflammation markers analyzed, which are linked to higher risk of cardio vascular disease (CVD), are associated adversely with environmentally relevant ambient pollutants, with the strongest associations in the upper range of the pollutant distributions, and in persons with a positive history of diabetes and CVD.

Authors: Liao, Duanping; Heiss, Gerardo; Chinchilli, Vernon M.; Duan, Yinkang; Folsom, Aaron R.; Lin, Hung-Mo; Salomaa, Veikko
Full source: Journal of Exposure Analysis and Environmental Epidemiology 2005, 15(4), 319-328 (Eng)
Thyroid hormones in pregnancy in relation to environmental exposure to organochlorine compounds and mercury

2005-12-06

Polychlorinated biphenyls (PCBs), chlorinated pesticides, and mercury are global environmental contaminants that can disrupt the endocrine system in animals and humans. However, there is little evidence that they can interfere with the endocrine status in pregnant women and neonates at low levels of exposure. The aim of this study was to examine thyroid hormone levels during pregnancy and in cord blood in relation to blood concentrations of organochlorine compounds (OCs) and Hg in healthy women recruited during pregnancy. A significant negative correlation was found between maternal total triiodothyronine levels and 3 non-coplanar congeners (PCB-138, PCB-153, and PCB-180), 3 pesticides (p,p'-DDE, cis-nanochlor, and hexachlorobenzene), and inorganic Hg independently, without any other changes in thyroid status. No significant relationships were observed between OCs and cord serum thyroid hormones. Cord serum free thyroxin was negatively correlated with inorganic Hg. These results suggest that at even low levels of exposure, persistent environmental contaminants can interfere with thyroid status during pregnancy.

Authors: Takser, Larissa; Mergler, Donna; Baldwin, Mary; de Grosbois, Sylvie; Smargiassi, Audrey; Lafond, Julie

Full source: Environmental Health Perspectives 2005, 113(8), 1039-1045

Prognostic significance of low serum levels of Clara cell phospholipid-binding protein in occupational aluminum neurotoxicity

2005-12-06

The relationship between respiratory and neurological effects of exposure to aluminum (Al) was investigated in a group of foundry workers exposed to Al at concentrations below the threshold limit value (TLV) binding in Poland (2.0 mg Al2O3 m-3). The results of our study support the hypothesis that subclin. neur. symptoms (esp. abnormal VEP) are most likely associated with internalization of Al ions with lipid fractions of the lung epithelium, which in turn may help Al ions overcome the blood-brain barrier. Low serum CC16 concentrations (<10 mug L-1) were noted in workers with the abnormal results of neurological (CNS) and neurophysiological (EEG and VEP) examinations as well as with Al body burden manifested by urinary excretion (Al-U) below 60 mug L-1 and Al-S concentration of 2 mug L-1. This concentration may be considered as a threshold allowable biological concentration of aluminum.

Authors: Halatek, Tadeusz; Sinczuk-Walczak, H.; Rydzynski, K.

Full source: Journal of Inorganic Biochemistry 2005, 99(9), 1904-1911

GB toxicity reassessed using newer techniques for estimation of human toxicity from animal inhalation toxicity data: New method for estimating acute human toxicity (GB)

2005-12-06

Estimated human inhalation toxicity values for Sarin (GB) were calculated using a new two independent, one dependent, non-linear dose response (toxicity) model combined with re-evaluated allometric equations relating to...
animal and human respiration. Based on the toxic load model for 1-30 min exposures, the human GB toxicities (LCt01, LCt05, LCt50 and LCt95) for 70 kg humans breathing 15 l min⁻¹ were estimated to be 11, 16, 36 and 83; 18, 25, 57 and 132 and 24, 34, 79 and 182 mg.bul.min⁻¹ for 2, 10 and 30 min exposures, respectively. These values are recommended for general use for the total human population. The empirical relationships employed in the calculations may not be valid for exposure times >30 min.

Authors: Bide, R. W.; Armour, S. J.; Yee, E.

Full source: Journal of Applied Toxicology 2005, 25(5), 393-409 (Eng)

Lindane-induced immunological alterations in human poisoning cases
2005-12-06
The objective was evaluation of immunological alterations in the blood of human lindane poisoning cases. Serum IgG, IgM, IgA, IgE, IL-2, IL-4, TNF-alpha, and IFN-gamma levels were measured using immunoassay in 20 human cases of lindane poisoning. Serum IL-2, IL-4, and TNF-alpha levels were significantly raised with a decrease in IFN-gamma levels in the lindane-exposed cases. Ig levels were not altered. Apparently, lindane exposure at chronically high levels affects cytokine levels in humans and indicates the severity of immunotoxicity.

Authors: Seth, Vandana; Ahmad, Rafat S.; Suke, Sanvidhan G.; Pasha, Sayed T.; Bhattacharya, Abhijit; Banerjee, Basu D.

Full source: Clinical Biochemistry 2005, 38(7), 678-680 (Eng)

Acetaldehyde disrupts tight junctions and adherens junctions in human colonic mucosa: Protection by EGF and L-glutamine
2005-12-06
Acetaldehyde, a toxic metabolite of ethanol oxidation, is suggested to play a role in the increased risk for gastrointestinal cancers in alcoholics. In the present study, the effect of acetaldehyde on tyrosine phosphorylation, immunofluorescence localization, and detergent-insoluble fractions of the tight junction and the adherens junction proteins was determined in the human colonic mucosa. The results demonstrate that acetaldehyde induces tyrosine phosphorylation and disrupts tight junction and adherens junction in human colonic mucosa, which can be prevented by EGF and glutamine.

Authors: Basuroy, S.; Sheth, P.; Mansbach, C. M.; Rao, R. K.