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SCIENTIFIC PROGRAM
ABSTRACTS BY SESSION

route of absorption in exposure to gases, vapors, and aerosols. In inhalation exposure, the dose absorbed can be calculated using the following equation:

$$C \text{ (mg/m}^3) \times T \text{ (h)} \times V \text{ (m}^3\text{/h)} \times R = \text{absorbed dose}$$

where C, concentration in the air; T, duration of exposure; V, lung ventilation; R, lung retention expressed as % of intake.

As lung retention of VOCs has been studied on human volunteers in costly and time-consuming chamber-type experiments, available data are limited. To calculate dosage for the purpose of risk assessment, the default value of 100% is used. As the lung retention of VOCs in lungs can vary from less than 20 to more than 90%, a possibility of predicting the retention values on the basis of blood/air partition coefficients (KB) has been investigated. Lung retention data for 36 compounds were obtained from the existing scientific literature. These values derive from human volunteer studies lasting at least 2 h. The KB values were either the already published experimental data or were calculated based on their physicochemical properties using a published solvation equation. The compounds under study were divided arbitrarily into two groups: water soluble (>10 g/l) and slightly soluble in water (<10 g/l) compounds. For water soluble compounds, the correlation between KB and lung retention was high ($r = 0.75$ and 0.73 respectively); this referred both to KB values obtained experimentally or calculated in this report. For the compounds slightly soluble in water, the respective values amounted to 0.79 and 0.82. The obtained results indicate that VOC retention in the lung can be calculated solely on the basis of the partition coefficient KB. As the descriptors used in the solvation equation can be predicted from chemical structure, this finding indicates that it is possible to assess lung retention for any chemical structure of VOC. The model described in the present report can be a practical alternative to the necessity costly and long-lasting chamber-type experiments which are also questionable on ethical grounds.

7. METAL EXPOSURE FROM FERROALLOY PLANTS: EXPOSURE ASSESSMENT AND NEUROFUNCTIONAL SURVEY IN ITALIAN ADOLESCENTS

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Background and Objective: Increased parkinsonism was observed in Valcamonica, a valley in the province of Brescia, Italy. Prevalence data were higher in the vicinities of ferroalloy plants and associated to the concentration of manganese in deposited dust. The aim of the present study was to assess motor, cognitive and neurosensory functions in adolescents in the exposed area and in a reference area.

Methods: Metals were measured in airborne particles collected with 24-hours personal samplers, and in salad sampled in local gardens. Samples were analyzed with Total Reflection X-Ray Fluorescence. Soil was analyzed at surface and 10cm depth. Adolescents were recruited through the local school system for neurobehavioral examination and assessment of dietary intake of metals. Blood and urine samples were collected for metal analysis.

Results: A total of 303 children residing in an exposed area and a reference area participated in the study. Preliminary data show airborne manganese levels of 57.78 ± 71.33 (range 1.24-516.70) ng/m^3 in the exposed area and 13.80 ± 11.36 (range 5.30-36.59) ng/m^3 in the reference area. Lead, iron, zinc and chromium also showed significantly higher levels. Manganese results were significantly higher also at the surface and at 10 cm depth of soil and in salad. Children in the exposed area showed impairment of motor coordination and odour identification associated with airborne manganese at multivariate analysis. Blood lead was inversely associated with IQ. Conclusion: Environmental exposure to manganese in adolescents is related to deficits in motor and olfactory functions whereas concomitant lead exposure is related to decrease of IQ.

8. BRCA1 GENES MUTATIONS AND ITS RELATION TO PREVIOUS INTAKE OF EXOGENOUS REPRODUCTIVE HORMONES IN BREAST CANCER CASES

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Background: Carcinoma of the breast is the most prevalent cancer among Egyptian women and constitutes 29% of National Cancer Institute cases. Recently, an increased risk of breast cancer was found for BRCA1/2 mutation carriers who ever used oral contraceptives, while for current users, no evidence was found among BRCA1/2 mutation carriers that current use of oral contraceptives is associated with risk of breast cancer more strongly than is past use, as is found in the general population.

Objective: To determine the rate of BRCA1 genes mutations and its relation to previous intake of exogenous reproductive hormones and to determine the relation between BRCA1 gene mutations and its product expression.

Subjects and Methods: A descriptive study study was carried out in the National Cancer Institute and Ain Shams University hospitals in Cairo. A total number of 31 breast cancer cases were included,. All cases were subjected to an interview questionnaire inquiring about risk factors for breast cancer including: socio-demographic, reproductive history and other environmental exposures. Anthropometric measurements, pathological staging and typing of tumour were determined. Immuno-histochemistry study was done to detect the profile of Estrogen and Progesterone receptors and blood samples were collected to determine levels of Estrogen and Progesterone. A breast tissue sample was analysed for BRCA1. The studied subjects were further analyzed as 2 groups according to ever intake of estrogen or progesterone hormones in their lives. **Control group** (Who have never taken estrogen or