TURJOEM
The Turkish Journal of Occupational / Environmental Medicine and Safety

Vol:2, No:1 (1), 2017 Web: http://www.turjoem.com ISSN : 2149-4711

P6. BIOTRANSFORMATION, BIOCUMULATION AND TOXICITY OF SOME PLASTIFIANS (BISPHENOLS; PHTHALATES)

Selçuk Salim ERDOĞAN, Dilek KAYA AKYÜZLÜ, Burak ARI

Ankara University Institute of Forensic Sciences
Forensic Medicine of Ankara Group Presidency, The Ministry of Health of the Republic of Turkey

Plastifians are clear, colorless and odourless chemicals produced through the reaction between alcohol and phtalic anhydrite. They give elasticity and shape to the products which are procuded through reaction with PVC. They are not only additives like pigments and filling materials but also chemicals that provide the features of polymer. The following are among the industrial products including plastifians: Vinyl, plastic containers, food packages, household goods, cosmetics, child care products, food imitation products, swimming equipment, gymnastic mats, sunbeds, seabeds, plastic printings and accessories on textile fabrics, raincoats, sneakers, plastic slippers, shoes, toners, vinyl flooring, blood collection tubes, stretch wraps, surgical gloves, respiratory equipment and masks and other medical equipment. A, AB, AF, Bisphenol B, BP, Bisphenol C, Bisphenol E, F, G, M, S, P, PH, TMC and Z (all from Bisphenols); Di-2sthyl hexyl phthalate (DEHP), Di octyl phthalate (DOP), Di iso decyl phthalate (DIDP) and Di iso nonyl phthalate (DINP) (all from Phthalates) are among the best known plastifians. Plastifians are also known as endocrine disrupting chemicals (EDCs). This very feature of plastifians can occur through several ways which include binding to steroid receptors. Some plastifian formulations are proved to have genotoxic features. Plasitifans, while being absorbed through dermal, oral and inhalation ways, are exposed to biotransformation in the liver and kidneys and can have a mutagenic and carcinogenic effect bioaccumulatively in the hormonal system within the endocrine system especially in the fat cells.

BPA, mostly taken into the body orally, are transformed into bisphenol A-glucuronide with a water-soluble metabolite in the intestines and liver. Being exposed to plastifians especially like bisphenol A even at a low dose can lead to such problems as breast and prostate cancer, decline in the sperm counts, abnormal penile/urethral growth in men, sexual precocity in women, increasing obesity, type 2 neurobehavioral disorders, diabetes, immune system disorders, endocrine, development and fertility disorders, birth defects, hormonal changes, infertility and weakness in the immune system.

* selcuksalimerdogan@hotmail.com