

**Children's Health in a Refugee Population in Azerbaijan.** Donnelly, K.C.<sup>1</sup>, Fields, N.<sup>2</sup>, Cizmas<sup>1</sup>, L. and Islamzadeh, A.<sup>3</sup>. <sup>1</sup>Texas A&M University, College Station, <sup>2</sup>US Environmental Protection Agency, and <sup>3</sup>Sumgayit Rehabilitation Centre.

Individuals within a population exposed to toxic chemicals are likely to respond in a variety of ways. More importantly, due to differences in weight, behavior and metabolic capabilities, children are likely to be more sensitive to environmental exposures than adults. Texas A&M, in collaboration with the US Environmental Protection Agency, the National Institute of Environmental Health Sciences, and the Sumgayit Rehabilitation Centre, is conducting an environmental exposure assessment study in Sumgayit, Azerbaijan. The purpose of this research is to track chemicals from the environment to ecological and human receptors. Ecological risk has been studied in both aquatic and terrestrial species. Human exposures are being monitored in a population living adjacent to a synthetic rubber plant, as well as in a rural population living in the foothills of the Caucasus Mountains. The population in Sumgayit is unique in that exposures from lifestyle (nutrition) are relatively homogeneous, and occupational exposures generally minimal. Thus, the research is able to focus on environmental exposures. Samples have been collected from a total of 45 families (25 in the exposed group and 20 control families). Each family includes at least two children, their parents, and at least one grandparent. For children and family members above 12 years of age, blood, hair and urine have been collected. In addition, DNA will be isolated from each subject for the analysis of Single Nucleotide Polymorphisms (SNPs) in three metabolizing enzymes (CYP1A1, GSTM1, NAT1) and three DNA repair genes. The following results represent data collected in the initial round of environmental, ecological and human sampling. While the data are preliminary, some general patterns have been observed. The primary class of contaminants detected in samples are the polycyclic aromatic hydrocarbons (PAHs). Lower levels of mercury and chlorinated chemicals have also been detected. The 2-3 ring PAHs predominated in dust samples, while in rodent tissues the 3-4 ring PAHs were the major chemicals, and more than 80% of the PAHs detected in human serum were 4-5 ring PAHs. The mean total PAH concentration in blood for the population with the highest exposures was  $631 \pm 222$  ng/mL of blood, while the population with low exposures had a blood PAH concentration of  $21.3 \pm 9.6$  ng/mL. This study also observed significant differences in DNA adduct levels in human white blood cells upon comparison of the exposed ( $12.6 \pm 0.9 \times 10^9$  RAL) and control ( $8.8 \pm 1.3 \times 10^9$  RAL) populations, respectively. Upon completion of the project, data will be available to determine contaminant concentrations in the environment, to model the transport of these contaminants into homes, to evaluate sources of exposure in human and ecological receptors, and to identify sensitive receptors within a population.