

Genetic mutation linked to asbestos exposure

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Mice inhabiting an area known for its high concentration of asbestos-contaminated dust, have a higher level of genetic somatic mutations, compared with other regions where asbestos pollution levels are lower. This has been shown in a new study carried out by Dr. Rachel Ben-Shlomo and Dr. Uri Shanas of the University of Haifa's Department of Biology in Oranim. "This study clearly indicates that there is a link between the higher levels of asbestos in the environment and the frequency of genetic somatic mutations in the mammals," the scientists said.

Earlier studies of asbestos have already shown that the thin fibers, which penetrate the body by [inhalation](#) or through consumption of food contaminated with the material, not only cause certain cancers but also genetic mutations in [DNA structures](#). It is also known that asbestos is a material that decomposes slowly, over many years. Data from the Israeli Ministry of Health indicate a rise in the number of [cancer patients](#) from exposure to asbestos in the Western Galilee region of northern Israel, and therefore the scientists set out to examine whether [genetic mutations](#) are found in the mouse population living in its northern town of Nahariya. They chose to probe mutations in mice because their generations are renewed every three months, so it could be assumed for the study that dozens of generations of this sample population in Nahariya had already been exposed to the fibers.

Wild mice from two locations were sampled – one group living close to a factory that manufactured asbestos-based products in Nahariya during 1952-1997, and a second group from a town located 50 kilometers, or 31

miles, from Nahariya and where no known asbestos pollutants are found. Samples were taken from both groups and six sites in the DNA were examined for genetic differences between the groups.

The results indicated differences between the groups' DNA and that the Nahariya-based mice had higher levels of genetic somatic mutations.

"These findings teach us that the pollutive, mutagenic asbestos increases somatic mutational frequency, which can in turn heighten the chances of developing cancerous growths," the researchers concluded.

Provided by University of Haifa

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