

Radiation exposure can cause genetic damage across generations

Beyond Nuclear attended the most recent [Investigator's Workshop](#) of the U.S. Department of Energy's Low Dose Radiation Research Program in early April. This series of workshops presents the most recent research on the effects of low dose radiation exposure across a range biological systems. Radiation regulators from various government agencies spoke, stating flatly that there is no solid proof of transgenerational genetic damage from radiation exposure in humans. They ignore or downplay the existing evidence and claim that, even if such damage does exist, it cannot definitively be linked to disease and its mechanism remains unknown. Regulators use this as an excuse to withhold protection from the public and the environment. But according to the [precautionary approach](#), a known mechanism is not necessary for protective action and inaction could result in unpredicted damage.

Radiation exposure of a parent can [damage](#) the genes of an unexposed child. These gene changes occur when reproductive cells (sperm or egg) are exposed to radiation. These mutations, called inheritable genetic mutations or germline mutations are [observed](#) in both animals and humans and can result in miscarriages, stillbirths, congenital defects, premature death, chromosomal abnormalities and cancer. A [study](#) of unexposed children born to Chernobyl liquidators shows there is a correlation between this genetic damage and thyroid cancers.

Moreover, these heritable genetic mutations can have [substantial collective health impact](#), perhaps effecting individuals rarely, but having greater impact on the human population as a whole. Permanently elevated genetic damage has been demonstrated in animals, which are not that genetically dissimilar to humans. Radiation exposure can result in dangerous and permanent contamination of the gene pool causing a sustained elevated level of embryo non-viability and genetic material aberrations (specifically chromosomal). The conventional wisdom was that this contamination would eventually be cleansed from the gene pool. However, a study by [Goncharova](#) examining animals in the Chernobyl region show, even to the 22nd generation, this cleansing may not occur and that genetic damage can compound with continued exposure. Further, this study demonstrated offspring of exposed parents born and raised in non-contaminated environments show the same levels of damage as their continually-exposed counterparts.