

Clinoptilolite Zeolite: A Solution to Radiation Exposure

~National Academy of Sciences

The dangers of radioactive materials are real. Radiation is cumulative, and most people are already over-irradiated even before being exposed to radioactive food, water, or dust particles in the air.

Experts say the fallout from the meltdown which occurred at the Fukushima Daiichi Nuclear Plant in Japan, could contaminate the world's food supply with toxic radiation. If the radioactive particles get caught in the jet stream, they will end up contaminating crops and grazing fields all over the world. Eventually, they will end up embedding in soil and water where they contaminate the environment; wildlife, soil, crops, and drinking water. Even cows grazing on radioactive grass produce milk unsuitable for consumption.

"The explosions could expose the population to longer-term radiation, which can raise the risk of cancer. These are thyroid cancer, bone cancer and leukemia. Children and fetuses are especially vulnerable. For some individuals even a small amount of radiation can raise the risk of cancer. The higher the radiation, the higher the risk of cancer." ~Lam Ching-wan, Chemical Pathologist, University of Hong Kong

Clinoptilolite zeolite was used at Three Mile Island to clean up radioactive wastes long before the nuclear disaster occurred at Chernobyl. Zeolite has been integrated into use at other nuclear plants (across the U.S. and Britain) as well as municipal water treatment facilities in order to reduce the ammonium ion concentration.

More than 500,000 tons of zeolite was dumped via helicopter at Chernobyl to absorb radioactive chemicals and other harmful toxins that were released during the disaster. In addition, cattle were fed clinoptilolite zeolite to help keep radioactive ions out of milk, and clinoptilolite zeolite was baked into cookies/biscuits (for children) and encapsulated into pills (for adults) to help minimize the contamination in humans.

The article titled 'La Roca Magica: Uses of Natural Zeolites in Agriculture and Industry' was presented at the 1998 National Academy of Sciences colloquium "Geology, Mineralogy, and Human Welfare" and later printed in the Proceedings of the National Academy of Sciences.

The real eye opener is found on Page 4 (3466) in the section appropriately called 'Nuclear Waste and Fallout'. The following excerpt from the section on this page 'Nuclear Fallout' is an explanation of how clinoptilolite zeolite removes radioactive cesium and strontium from the body, as well as from soils, etc.

The same selectivities for Cs and Sr by **zeolites permit treatment of radioactive fallout from nuclear tests and accidents**. The **addition of clinoptilolite to soils contaminated with ^{90}Sr markedly reduced the strontium uptake by plants** (51), and the **presence of clinoptilolite inhibited the uptake of Cs in contaminated Bikini Atoll soils** (52). Several **zeolite processes have been developed to counteract the fallout from the 1986 Chernobyl disaster**. Shenbar and Johanson (53) found that ^{137}Cs in soils **was not taken up by plants after treating the soil with a zeolite**, and Forberg et al. (54) showed that a **zeolite supplement to the diets of Swedish reindeer accelerated the excretion of ^{137}Cs ingested with food contaminated by Chernobyl fallout**. **Zeolites added to soils reduced the uptake of ^{137}Cs by pasture plants in the vicinity of Chernobyl** (55), and **dietary zeolite reduced sorption of radiocesium by sheep fed fallout-contaminated rations in Scotland** (56). **In Bulgaria, zeolite pills and cookies were prepared for human consumption to counteract Chernobyl fallout** (57). The zeolite apparently exchanges ^{137}Cs and ^{90}Sr in the gastrointestinal tract and is excreted by normal processes, thereby minimizing assimilation into the body.

Link to the Full Article:

<http://www.pnas.org/content/pnas/96/7/3463.full.pdf>