



HEALTH PHYSICS SOCIETY

Specialists in Radiation Safety

Is Potassium Iodide a “Magic Bullet” for Radiation Exposure?

HEALTH PHYSICS SOCIETY FACT SHEET

Potassium iodide can provide important protection for one organ from radiation due to one radionuclide. It can only provide protection for the thyroid gland from an intake of radioiodine. It doesn't have any value in protecting other organs of the body or in providing protection from radiation from other radioactive nuclides. For example, potassium iodide has no protective value from a “dirty bomb” or a dispersion of spent nuclear fuel. Here's why.

This simple salt, potassium iodide (KI), has received much attention lately, being featured on news programs, in news magazines, and even on eBay. But some of the claims and reports give misleading information about this salt's effects on the body and its role in radiation safety. So, what is KI and how can it help?

The compound KI is routinely added to table salt, sodium chloride (NaCl), to iodize the salt. Iodine is an element that is taken from the bloodstream by the thyroid gland and is necessary for its proper functioning. The thyroid gland does not discriminate between radioactive and nonradioactive iodine.

KI has been erroneously represented as a “magic bullet” of radiation protection. KI, if taken properly, only protects against internal radiation from radioiodine taken into the body. It will NOT protect against external radiation or internal radiation from radionuclides other than radioiodine. This salt, if taken either before or very soon after a radioiodine intake and if taken in the proper dose, will block the uptake of radioiodine by the thyroid. KI can be in the form of a pill or a supersaturated solution. The recommended daily dosage for an adult is 130 milligrams. If the thyroid absorbs all the iodine that it needs from the nonradioactive KI, then the radioactive iodine will not be absorbed and will be eliminated from the body mostly by way of the urine. Reducing the amount of radioiodine absorbed in the thyroid will reduce the dose received by the thyroid thereby reducing the risks of thyroid cancer. Even though there have been minimal side effects (e.g., gastrointestinal effects or rashes) from the use of KI, this substance should only be taken on the advice of health-care providers. Again, KI will only help reduce the effects of radioiodine taken into the body and not from other radionuclides.

The only possible sources of large radioiodine releases are from a nuclear weapons detonation and a catastrophic accident in an operating nuclear reactor. Therefore, KI has no protective value from a “dirty bomb” or a dispersion of spent nuclear fuel.

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In the last several years the Nuclear Regulatory Commission (NRC), the Federal Emergency Management Agency, and the Environmental Protection Agency have written and released recommendations and reports on the use of KI in emergency situations. In December 2001, the NRC sent a letter to states informing them that if they wanted, and if they met certain conditions in their emergency response planning, the NRC would provide stockpiles of KI for populations within 10 miles of a nuclear power plant. As of May 2002, 13 states have either requested or received KI supplies.

The Health Physics Society is a nonprofit scientific professional organization whose mission is excellence in the science and practice of radiation safety. Since its formation in 1956, the Society has grown to approximately 6,000 scientists, physicians, engineers, lawyers, and other professionals representing academia, industry, government, national laboratories, the Department of Defense, and other organizations. Society activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. Society members are involved in understanding, evaluating, and controlling the potential risks from radiation relative to the benefits. Official position statements are prepared and adopted in accordance with standard policies and procedures of the Society. The Society may be contacted at 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; phone: 703-790-1745; fax: 703-790-2672; email: hps@burkinc.com.