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## My Friend Iodine

I first met iodine when I was a child. It came in a vial with a screw cap and glass rod to apply to scrapes and cuts. It had a skull and crossbones on the label and was marked "Poison." It burned and stained the skin with a strange odor, but it kept those scrapes and cuts from becoming infected.

I met iodine again in high school. Its crystals were purple and exhibited a property called sublimation: if heated, iodine did not melt; it went from a solid to a gas phase. Iodine also did other things: in dilute solution, it turned starch black and could be used as an indicator. At that time, I learned that iodine prevents goiters caused by iodine deficiency in inland regions far from the ocean. In college, I learned that the degree of unsaturation of fatty acids could be determined by the amount of iodine that chemically bound to them, the so-called iodine number. Also, iodine could combine with organic molecules, forming, for example, the essential thyroid hormones, triiodothyronine and thyroxine.

It seemed quite natural and convenient when I found my old friend iodine several years later as a radionuclide. From the 1950s to 1980s, when delivery of radioactive material was slow, iodine served as  $^{131}\text{I}$  with an 8-day half-life. It was used for 24-hour thyroid iodine uptake measurements and then for thyroid scanning as well as a label to trace the biologic turnover of compounds such as albumin and hippuran. Larger doses of  $^{131}\text{I}$  were replacing surgery and potentially hazardous anti-thyroid drugs to control hyperthyroidism. It was the ingredient in the atomic cocktail—the magic bullet being used to ablate thyroid cancer even if it had already metastasized. In other guises, such as  $^{131}\text{I}$ -labeled macroaggregates of albumin, it provided a tracer for pulmonary perfusion imaging until someone determined how to replace iodine with a form of technetium. For the laboratory and radioimmunoassay studies, iodine could be obtained as  $^{125}\text{I}$  with a 60-day half-life and an easily shielded low-energy emission. When delivery was no longer a problem and iodine was needed with physical properties more like  $^{99\text{m}}\text{Tc}$ , it became available as  $^{123}\text{I}$ .

Iodine is an old friend. Like an old friend, it is reliable and available when needed. Although it may not be necessary, I want to thank my old friend for its help all of these years. Things would not have been the same without it.

Stanley J. Goldsmith, MD

Editor-in-Chief, *The Journal of Nuclear Medicine*  
April 1996