RADIATION AND FOOD

TECHNICAL INFORMATION PAPER NO. 91-001-0311

PURPOSE. To provide information for preventive medicine personnel on the use of food that could potentially be contaminated with radioactive material.

FACTS.

a. Radioactive contamination of food can happen in three ways: direct contamination, indirect contamination, and induced activation (made radioactive). Direct contamination occurs when radioactive materials collect on plants, animals, and stored food (also referred to as surface contamination). Indirect contamination occurs throughout the food chain as plants, animals, and fish take in radioactive material. Induced activation involves food products that are exposed to neutrons (such as a nuclear explosion) and components of the food become radioactive.

b. Eating foods or drinking liquids with suspected radioactive contamination should be avoided if readily accessible alternatives are available; otherwise, additional guidance should be sought. However, if consumption does occur, most radioactive contaminants will pass through the digestive tract very quickly with little or no harm. However, some elements are more hazardous because they can be absorbed from the digestive tract and are metabolized. An example is radioactive iodine, which is readily taken up in the body and concentrated in the thyroid.

c. Some food items have more potential for becoming contaminated with radioactive materials. Fresh foods stored in the open without surface protection can easily become contaminated. Decontamination of leafy vegetables and meats can be difficult and time consuming. Therefore, appropriate food packing and storage can protect food supplies by preventing contamination from radioactive materials. Packing made from hard and nonporous materials, such as plastic or multilayer cardboard with a smooth surface, is recommended.

d. Animals that have consumed radioactive contamination in their feed might still be fit for consumption and slaughtered using routine procedures. Over time, their meat and milk will retain radioactive contamination from eating and drinking unprotected food and water. The primary, long-term protective measures are to keep animals indoors and avoid using contaminated feed and water supplies.

USAPHC
U.S. ARMY PUBLIC HEALTH COMMAND (Provisional)

e. Safe consumption of food when contamination is suspected requires prioritizing from the most protected to the least protected supplies. In general, detecting radioactive contamination requires specialized equipment. The further from the source of radioactive contamination the food is produced (grown or processed), the less likely it is to be contaminated. Food stored in an intact building is unlikely to be significantly contaminated.

f. Foods that are in sealed and dust-proof packaging (such as cans, jars, or fiberboard) are adequately protected. Contaminated food packaging may be cleaned as the majority of radioactive material can be removed. This is done by cleaning the outer surfaces of the packaging; washing your hands; then removing and disposing of the packaging; scrubbing and washing your hands with soap and water; and finally, the food can be removed for consumption. If safe raw food is not available, raw food with surface contamination can be rendered safer to consume by removing the contaminated surface (peeling or paring) or by washing. For example, cheeses, margarine, and butter can be trimmed (about 1 inch). It is important to note that boiling or cooking food items will **NOT** effectively remove any radioactive contamination.

g. Additional information on radioactive contamination of food can be found here—

- The Food and Drug Administration's "Guidance on Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and http://www.fda.gov/downloads/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/UCM094513.pdf
- Guideline levels for radionuclides in foods following accidental nuclear contamination for use in international trade: http://www.iaea.org/Publications/Magazines/Bulletin/Bull383/box3.html
- Codex General Standard for Contaminants and Toxins an Foods: http://www.codexalimentarius.net/download/standards/17/CXS_193e.pdf
- Joint Food and Agriculture Organization/IAEA, Emergency Preparedness & Response, Agricultural Countermeasures: http://www-naweb.iaea.org/nafa/emergency/agricultural/index.html.

h. For general information on radiation emergencies, go to The Centers for Disease Control and Prevention's website at: http://www.bt.cdc.gov/radiation/

PREPARED BY: COL HUCK (210-221-6547)

DATED: 18 MARCH 2011