



## **Radioactive Particle Containment and Control**

Radioactivity is generated by the decay of individual atoms of certain unstable materials.

In the fallout from an accidental nuclear reactor failure, for example, released atoms of radioactive material likely will be dispersed in a range of particle sizes and in combination with dust, debris and various other non-radioactive materials. Larger particles can fall near or at the accident site but small particles that become airborne are carried aloft with very small particles sometimes carried long distances and widely dispersed. Particle fallout patterns are influenced by transport velocity, downwind topography, particle type, concentration, possible rainfall and accident magnitude. Although widely varied in size, early studies resulting from various nuclear explosive experiments reported predominant particle sizes being concentrated in the 1 to 10 micron size range.\*

General Ecology water **purification** systems, including Seagull®IV, First Need®, etc., are independently certified to remove greater than 99.9999% of water borne enteric disease bacteria (0.4 microns = 400 nanometer size range), 99.99% of water borne viruses (0.04 microns = 40 nanometer size range) and 99.9% of water borne Crypto (3 micron size range). In addition these systems also remove many halogenated compounds, including various iodine solutions. This effectiveness is achieved by the following three “separation mechanisms”:

1. Microstraining removal of particles above 0.4 microns (~400 nanometers)
2. Long term (+) and (-) charge induced materials attract and hold many oppositely charged very small particles such as viruses (0.04 microns ~40 nanometers), for example.
3. Broad spectrum adsorption of many organic compounds such as chlorine, bromine and iodine associated disinfection by-products and compounds.

***Although specific tests of General Ecology’s Structured Matrix purification systems have not been conducted relative to nuclear radiation fallout the size ranges indicated above include a major portion of the estimated size ranges of airborne nuclear particle fallout.***

Theoretically, once trapped within General Ecology’s proprietary and unique “Structured Matrix” cartridges and canisters, radioactive particles will continue to decay until they may no longer be significantly radioactive. Unfortunately, the rate of decay depends on the specific radioactive elements, some of which decay very slowly. Iodine (I 131), for example, has a half life of 8 days while Strontium (90) has a half life of 28 years. During that time energy released should be shielded and at least partially reduced in intensity by the Seagull IV stainless steel housing, together with internal shielding resulting from contained water and cartridge materials. Cartridges should be changed annually and, obviously when clogged, or more frequently depending upon the local conditions.

Like everyone else we are trying to learn more about probable degradation components and combinations of particles likely to be released from radiological materials.

General Ecology, Inc. is fortunate to be able to make its point-of-use, water purification products available through a reputable, highly ethical and well established distribution network in Japan.

***Important:*** General Ecology Inc. drinking water purification devices (as shown earlier in this document - second paragraph) are independently certified, to the EPA Guide Standard and Protocol for Testing Microbiological Purifiers to protect against water borne, enteric pathogens including bacteria, cysts and viruses. *Emergency situations, including earthquakes, tsunamis, loss of power, flooding, etc., can and often do result in inadequate drinking water treatment and purification.* Portable purifiers such as General Ecology's *First Need*® and emergency manual pumps for Seagull IV drinking water purifiers are available through our distributor in Japan. Please inquire:

Please contact **GrandDukes Corporation, Ogikubo SY Bldg. 5<sup>th</sup> Floor, 2-4-4 Amanuma, Suginami-ward, Tokyo, Japan 167-0032, Attention: Mr. Masanaga Hikichi, President, Phone: 813-5397-2200, Fax: 813-5397-9200. Their website is <http://www.granddukes.com>, email: [info@granddukes.com](mailto:info@granddukes.com).**

**Mr. Masanaga Hikichi, President of Grand Dukes, will provide further information, availability and installation assistance.**

Incidentally, several years ago General Ecology also provided First Need and other purifiers to Japan through the Japanese Defense Agency and Grand Dukes Corporation, in relief of the Kobe Earthquake Disaster. General Ecology Inc., USA, founded in 1973, has been privileged to work with Grand Dukes Corporation over the past approximately 30 years. We want to again be of help to the people of Japan.

Very truly yours,

*Richard T. Williams*

President and Founder, General Ecology, Inc. USA

\*Ref: Richard T. Williams publications: University of California

\*Pure Water Place, Inc. publication regarding emergency preparedness:

<http://www.purewaterplace.com/environinfo.htm> (suggest ref via Google- Pure Water Place website under modification)

TZ.Emails.RTW.GENERAL.NEW.RadioactiveParticleRemoval.032911.tz



151 Sheree Blvd. • Exton, PA 19431 USA • (610) 363-7900 • fax (610) 363-0412 • [www.generalecology.com](http://www.generalecology.com)