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Gamma Spectroscopy of FMC Garnet Samples CHRIS MARBLE, DANIEL MARBLE, Tarleton State University — Garnet sands are routinely used as cuttings agents in water jets for machining hardened steels. These sands are then collected and discarded in local landfills. During disposal of cutting sands by FMC, radiation alarms were set off at a local landfill. We have performed gamma ray spectroscopy on samples of this garnet sand as well as virgin (unused) garnet samples also supplied by FMC using a 40% efficient high purity germanium detector. The radioactivity in both samples is composed primarily of naturally occurring radioactive isotopes from the thorium and uranium decay chains. The presence of the actinium decay chain isotopes could not be confirmed. Gamma spectroscopy showed no new peaks between the spectra of the two samples though the used garnet sample showed an increase in its specific activity. This suggests that the increase in radioactivity of the garnet samples during the manufacturing process is not due to the inclusion of new radioactive isotopes from the steel being cut, but due to the loss of lighter nonradioactive material (probably silicates) that were carried away by the water of radioisotopes.

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