found to have inhaled measurable levels of this compound in particulate form.

These accident cases were of particular interest to Marinelli, who devoted a great deal of time to the measurements and the analysis of the results (Marinelli et al. 1953). He was surprised to find that these subjects exhaled no more than 25% of the radon formed within their lungs, in contrast to the 60-70% exhalation found when radium was deposited within the skeleton. The low exhalation was thought to be due to the low solubility of radium sulfate within the lungs. Some of these individuals were brought back to Argonne several times over the next few years to monitor the disappearance of radium from their lungs.

Two subsequent accidents tested the capabilities of the newly formed multidisciplinary research team in RPY. The first of these, on June 2, 1952, involved an exposure to neutrons and gamma rays at the ZPR-1 reactor at Argonne. Although this accident did not involve radium, it did require evaluation of the dose received by reactor workers. A number of approaches were employed in RPY and in other divisions to evaluate the dose from highly overexposed film badges.

June 2, 1952, was also the date on which a large quantity of fallout from an atomic bomb fell on Argonne. At about 3 a.m. on June 3, when Stehney was determining the decay rate of neutron-induced activities in samples irradiated during the accident, the fallout on the roof of the building caused the counters he was using to show higher and higher backgrounds. Some time was required to determine the cause of the abnormal behavior.

Less than two weeks later (June 13, 1952), a radium source used to calibrate health physics instruments released radium during use in the basement of Building 203. The technicians using the source were exposed, and the contamination subsequently spread throughout the building via the air circulation system. The exposed employees were monitored for several years, until neither their originally low body content nor their radium excretion was measurable.

Subsequently, under the direction of Rose and Miller, the first "iron room" or whole-body counter was assembled in 1954 (Miller et al. 1956). This counter, constructed in the A-Wing basement of Building 203, was built from pre-World War II steel, to assure that the metal did not contain radionuclides from fallout produced by postwar bomb testing. In subsequent years this room was provided with 1/8 in. of lead on the inside walls to further reduce the gamma-ray background. Later, Lucas developed a system to supply radon-free air for this room. However, the room had such a large rate