Carcinogenicity of Embedded Tungsten Alloys in Mice

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Abstract: A variety of unique metal mixtures have entered the military arsenals of many countries in recent years. One such material is the tungsten alloys, which have been proposed as replacements for **depleted uranium** (DU) in armor-penetrating munitions. As a result, opportunities for exposure are increasingly likely. This leads to questions, similar to those originally surrounding DU, as to the health effects of exposure to the tungsten alloys, especially for embedded fragment exposures. The Armed Forces Radiobiology Research Institute (AFRRI) recently performed research that showed one of the militarily promising tungsten alloys to be a potent carcinogen when implanted in rats. The need to confirm the carcinogenicity of such alloys in another rodent species is an important second step required in biological as well as regulatory terms to better assess the cancer risk in humans. Results of this work will help in formulating policies for military surgeons who must treat personnel wounded by fragments of the alloys. Indications of unacceptable risks of exposure will also help determine the advisability of deploying (or developing) similar munitions. In year 2 of this project, despite a change in Principal Investigator, substantial progress has been made. Pellets for implantation were received and all mice in the 24-month experimental groups successfully implanted. At present, there have been no adverse health effects as a result of pellet implantation.

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