

Column E Explanation

Armed Forces Radiobiology Research Institute

1. Registration Number: 51-F-005.
2. Number of animals used in this study: 8.
3. Species (common name) of animals used in the study: Swine.
4. **Explain the procedure producing pain and/or distress.**

To gather sufficient information to construct mortality probit (A procedure used in dosage-response studies to avoid obtaining negative response values to certain dosages) curve to use in choosing radiation doses for testing radiation countermeasures, animals will be irradiated at 1.6, 1.7, 1.8, 1.9, and 2.0 Gy at 0.6 Gy/min utilizing the cobalt facility. The **gray** (symbol: Gy) is the SI unit of absorbed radiation dose of ionizing radiation (for example, X-rays), and is defined as the absorption of one joule of ionizing radiation by one kilogram of matter (usually human tissue).

Irradiation itself is not a painful process but it induces various changes in the body (i.e., vomiting and nausea, changes in hematology cells numbers, etc.). Although radiation does not induce pain, animals in these experiments might experience pain and distress prior to death because of sequelae. Radiation compromises the immune system. As a result of a compromised immune response, various types of infections can initiate and become painful. The sequelae of nausea, vomiting, and diarrhea may cause pain and distress in humans observed in the early post-irradiation period, when lethal doses are used.

5. **Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results.**

Irradiated animals die due to compromised immune responses and opportunistic infections. The percentage of surviving animals is the indicator of the efficacy of a countermeasure. We cannot give anesthetic and/or analgesic agents to animals after the irradiation procedures, since they are known to interact with the immune system, and would confound the correlation of radiation dose with incidence of moribundity, resulting in a waste of animals.

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Obtained by Rise for Animals.

Uploaded to Animal Research Laboratory Overview (ARLO) on 09/02/2020