

South Dakota Science and Technology Authority
P.O. Box 8329
Rapid City, SD 57709

December 8, 2005

Dear Sirs,

In this letter of interest, I propose a study for the biological effect of low levels of radiation using the shielding of the Mine to control the amount received from cosmic rays.

In Health Physics, one aspect of evaluating the risk provided by radiation is the number of cancers certain doses of radiation produce. For the most part, it has been suspected that the linear relationship between frequency of cancers and the radiation dose (which is seen at very large doses) should continue at lower doses. Statistical errors associated with low doses have not permitted such a conclusion until recently, but in general agencies regulating the amount of radiation exposure for employees have taken the more conservative (i.e. linear) approach.

The recent data comes from survivors of the atomic bombs in Japan: Those that received high doses have more or less died, and the remaining population received a lower dose depending upon where they were. Cancers for that population have been tracked since then.

In this proposed study, the effects for low doses of radiation would be performed on insects, other invertebrates, and perhaps small mammals placed at varying depths within the Mine. The important question is whether the background from other sources in the rock besides cosmic rays would be low enough for such a study. If it is, then perhaps controlled doses of other forms of radiation such as X-rays or electrons could be applied and analyzed. If neutrinos can be studied at the mine, and if clean rooms can be built there, then the analysis of cellular effects could be performed there as well.

Sincerely,

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