INTERNATIONAL CONFERENCE ON HUMAN DETOXIFICATION
STOCKHOLM, SWEDEN — SEPTEMBER 11 & 12, 1997

Evaluation of Parameters of Cs-137 Elimination and Their Modification during the Detoxification Program in Residents of Post-Chernobyl Contaminated Territories

A. E. Kondrashov, Ph.D., D.V. Petin, Ph.D.
Medical Radiological Research Center
Obninsk, Russia.

J. G. Barnes, Certified Health Physicist
Foundation for Advancement in Science and Education
Los Angeles, California, USA

The study on the effectiveness of the detoxification program action on the rate of Cs-137 elimination from the human body was performed in the Medical Radiological Research Center of the Russian Academy of Medical Sciences (MRRC RAMS) in 1996.

Two patient groups consisting of males aged 20-40 years of age took part in the program. The first group included 12 persons, the second group contained 18 persons. Of the 30 persons selected for the program, 22 participated in the Cesium screening procedures.

The following measurements were taken during the evaluation. The clothing of all participants was screened for surface radioactive contamination to ensure that anomalous results were not produced by contaminated clothing or personal effects.

Basic radiological measurements for the groups consisted of the following:

o Radiological characterization of food samples provided by the participants

o Daily measurements of Cs-137 in each patient, using the MRRC RAMS whole body counting system (3'' X 3'' NaI(Tl) scintillator connected to a Canberra Multichannel Analyzer positioned over the chest).

o Measurements of Cs-137 in each patient, using the MRRC RAMS whole body counting system (3'' X 3'' NaI(TI) scintillator connected to a Canberra Multichannel Analyzer positioned over the chest).

According to the scientific literature, Cesium-137 is eliminated from the human body at a predictable rate (consisting of a short-term exponential retention component of about 2 days and a long-termed component of about 100 days). Personnel were not started on the detoxification protocol for approximately 7 - 10 days. As a result, the short-term component was allowed to be removed from the body prior to the start of the program. In addition, the daily WBC measurements could be used to establish a natural elimination rate for each individual for the long-termed component. Any variations in elimination rates induced by the protocol could then be determined by comparison to the pre-detox period. Each patient could then be used as his own control, thus

the constitution of a dedicated control group was not required. In addition to comparison to control values determined during the study, comparison to the predicted cesium elimination rates promulgated by the International Commission on Radiological Protection (ICRP) was used as an additional verification of the cesium elimination behavior.

Group 1 Results

The results of measurement with the WBC facility during the first examination stage showed that, in the majority of patients, the long-term elimination half-life was in good agreement with published data. Evaluation of the data following the completion of the detox program suggests that no significant increase in the elimination rates of Cesium-137 was provided by the detox protocol. The activity of Cesium-137 in urine was found to be in general agreement with the levels that would be expected from natural excretion processes in the body (based on data analysis using the Intake Retention Fraction (IRF) method of NuReg/CR-4884. Though the focus of this trial was on Cesium-137 levels, it should be noted that a number of significant improvements in the physical and mental condition of the participants resulted from the detoxification regimen.

Group 2 Results

It was speculated that the Cesium in the first group of patients had mobilized, but had not been eliminated. In order to further study the behavior of the cesium in the body, the following tests were added to the second test protocol:

It was speculated that a significant amount of cesium had been excreted in sweat. Accordingly, Cs-137 content in sweat excreted during the sauna period was measured for the five patients with the largest measured body burden.

Cesium is highly soluble in body fluids, and tends to be retained in the muscles. To determine if the pooling behavior was being affected, five patients in the second group with the highest body burdens had measurments taken of the thigh muscle tissues using a 3''X3'' NaI(Tl) scintillator connected to a multi-channel analyzer.

The sampling and counting schedule was also changed in the second group. Three stages were defined and characterized:

Control (about 7 days)

Detoxification (about 14 days)

Post Detoxification (about 1-3 days)

The duration of the first period permitted the partial elimination of the short-termed component of the retained cesium; a longer period would have been needed to fully eliminate this component. Nevertheless, the control data was sufficient to obtain a reasonable estimate of the rate of elimination for comparison to the detoxification stage. These comparisons did not establish a

significant acceleration of cesium elimination. Similarly, the counting of the thigh muscles did not reveal a significant mobilization of cesium within the body.

Measurable levels of cesium were found in the sweat samples. While these levels do not appear to correlate with urine levels, there is some evidence to suggest that levels of cesium in urine decrease when increased cesium levels are present in sweat.

As in the first group, significant improvements ere noted in the physical and mental conditons of those who completed the program.

Further Research

All participants in these trials experienced substantial self-reported benefits from the protocol. Yet it appears that the metabolism of cesium is more complex than originally assumed. Further examination of means to accelerate its displacement are warranted. Previous studies regarding the Hubbard detoxification program have noted an increased rate of elimination of foreign chemicals weeks and even months after completion of the formal protocol. It is unknown at this time whether a similar delayed response might occur in regard to Cs-137.