



HEALTH PHYSICS SOCIETY

Specialists in Radiation Safety

KATHRYN H. PRYOR, CHP
President

[submitted electronically]

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Dr. K. Jack Kooyoomjian
Designated Federal Officer
SAB Staff Office (1400R)
Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

Subject: Proposed Revision to the Multi-Agency Radiation Survey and Site Investigation Manual

Dear Dr. Kooyoomjian:

The Health Physics Society¹ (HPS) is a professional organization whose mission is to promote excellence in the science and practice of radiation safety. The HPS appreciates the opportunity to participate in the process initiated by the U.S. Environmental Protection Agency to revise the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).

In 1999, the Health Physics Society adopted a position statement on "Clearance of Materials Having Surface or Internal Radioactivity". In this position statement, the HPS stated that the development of standards for, and the definition of, clearance levels was "an important part of the standards that provide for the safe handling, use, and disposal of radioactive materials." This position statement was subsequently reaffirmed by the HPS in 2007. The HPS considers the MARSSIM document to be a valuable extension of clearance standards in providing a consistent approach for planning, performing, and assessing building surface and surface soil final status surveys for meeting such standards.

¹ The Health Physics Society is a nonprofit scientific professional organization whose mission is to promote the practice of radiation safety. Since its formation in 1956, the Society has grown to approximately 5,000 scientists, physicians, engineers, lawyers, and other professionals representing academia, industry, government, national laboratories, the department of defense, and other organizations. Society activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. Society members are involved in understanding, evaluating, and controlling the potential risks from radiation relative to the benefits. Official position statements are prepared and adopted in accordance with standard policies and procedures of the Society.

The HPS believes that revision of the MARSSIM at this time is particularly timely in light of recent and on-going efforts by U. S. regulatory agencies (Nuclear Regulatory Commission and Department of Energy) and standards-setting bodies (American National Standards Institute acting under the Health Physics Society Standards Committee) to establish revised clearance standards and requirements. While the HPS considers the current MARSSIM [and its companion supplement, the Multi-Agency Radiation Survey and Assessment of Materials and Equipment (MARSAME)] to be valuable documents for implementing established clearance standards, the HPS believes the MARSSIM should be revised to reflect new technology and experience gained in application of this document since its last revision in 2000.

The HPS recommends that the revision of the MARSSIM address the following issues:

- 1) Updated and expanded discussion of measurement uncertainty - The concept and application of measurement quality objectives (MQOs) should be discussed (comparable to the discussion of MQOs in the MARSAME). The extensive mathematical treatment of uncertainty, while adding technical rigor, may also act as a deterrent to the wide-spread use of the MARSSIM. This extensive mathematical treatment could make the methodologies presented seem unduly complicated, and therefore, less likely to be adopted. The MARSSIM needs to be perceived as a field-implementable document in order to achieve full acceptance and application. The Society recommends that more examples of the determination of measurement uncertainties be added to better clarify and illustrate the application of the uncertainty methodologies.
- 2) Consistent terminology and nomenclature between the MARSSIM and MARSAME - The terminology and nomenclature of the MARSSIM and the MARSAME need to be consistent. The MARSAME should be reviewed following any revision of the MARSSIM and any necessary revisions to the MARSAME adopted to maintain consistency between the two documents.
- 3) Expanded discussion of elevated measurement (i.e., "hotspots") methodology - The current discussion on elevated measurement (i.e., "hotspots") methodology is unduly complicated, difficult to implement, and likely to lead to unnecessarily restrictive survey requirements. It is recommended that alternative approaches, such as those suggested by Dr. Eric Abelquist² be incorporated. An expanded discussion on elevated measurement methodologies for multiple contaminants is also needed.
- 4) Scan-only surveys - The MARSAME includes the concept of scan-only surveys, as opposed to the two-step survey approach in the current MARSSIM. The concept of scan-only surveys should be extended to the MARSSIM with a discussion of the proper application of this survey approach.
- 5) New technology - The MARSSIM should be revised to include reference to and discussion of technology developments, including proper application to clearance surveys, since the last revision of MARSSIM (2000). Such technologies would include improved data-logging instrumentation, GPS-correlated instrumentation, geospatial technology for automated mapping of indoor surveys, and survey design and analysis software (e.g., Visual Sample Plan, COMPASS).

² Abelquist, Eric Warner, "Dose Modeling and Statistical Assessment of Hot Spots for Decommissioning Applications." PhD dissertation, University of Tennessee, 2008. http://trace.tennessee.edu/utk_graddiss/409

- 6) Subsurface surveys - The current scope of the MARSSIM does not include subsurface contaminants. However, the presence of subsurface contaminants remains a persistent issue at many clearance sites, in particular, Uranium Mill Tailings Radiation Control Act (UMTRCA) sites. The MARSSIM should be revised to include explicit discussion of designing, performing, and analyzing subsurface surveys. At a minimum, the MARSSIM needs to provide basic guidance on how MARSSIM approaches and methodologies could be extended to subsurface surveys.

The HPS appreciates this opportunity to provide comments on the proposed revision of MARSSIM. If you have any questions regarding these comments, please feel free to contact me at 5 or

Sincerely,



Kathryn H. Pryor, CHP
President

cc: Wayne Glines
Sarah Roberts
Rich Vetter
Brett Burk