MARSSIM | Multi-Agency Radiation Survey and Site Investigation Manual

What is MARSSIM?

The Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) provides guidance to federal agencies, states, site owners, contractors, and other private entities on how to demonstrate that their site is in compliance with a radiation dose- or risk-based regulation, otherwise known as a release criterion.

MARSSIM provides:

- A process for determining the history of radioactive material at a site.
- Methods for surveys of the site for radioactive material in excess of natural background levels.
- Guidance on developing a survey plan (number of samples, taking accurate samples, where to take samples), determining the extent of necessary radiation scanning, and deciding what equipment is needed.
- Information on how to use statistics to interpret the test results.

When would a private entity use MARSSIM?

- If they have a building or land where radioactive material potentially was released.
- If they have determined that no remediation is necessary or have taken needed remedial actions already.
- If they want to prove that their site meets the release criteria for radioactivity.

What is the MARSSIM process?

PLAN

Historical Site Assessment

- Determine the potential for radioactive material in excess of natural background at the site.
- Determine what types of radionuclides might be involved.
- Decide on classification: MARSSIM uses a graded approach, classifying sites into one of three classes, based on the amount of radioactive material expected to be in excess of natural background. The more radioactive material expected, the more stringent the sampling and scanning plan.

Determine sampling and scanning Derived Concentration Guideline Levels (DCGLs):

- The DCGLs are measurable numbers that correspond to the release criteria.
- Several factors are taken into account when determining DCGLs, including (but not limited to):
    - Types of radionuclides present
    - Number of radionuclides
    - Regulatory requirements
    - Best educated guess of background levels
    - Level of accuracy required
- MARSSIM users work to prove that their site falls below the determined DCGLs.
- Decide what information is needed to make an informed decision.
- Create a detailed survey plan: The extent of the survey will vary based on the site's classification. *MARSSIM surveys have two parts:*
- Sampling – Sample readings are compared to the sampling DCGL. The inspection passes if the readings are all lower than the DCGL. If some readings are higher, statistical analysis will determine if the site passes.
- Scanning – Scanning readings are compared to the scanning DCGL, which is generally a higher number than sampling DCGL. If any scan reading is higher than the scanning DCGL the inspection fails.

IMPLEMENT

- Sample and scan the site in accordance with the plan.

ASSESS

- Analyze the readings.

DECIDE

- Based on analysis, decide whether the site meets the release criterion.