

How the Master Evidence Matrix Supports SEC-00256

The Master Evidence Matrix is designed to demonstrate how individual historical and technical issues affect the statutory question of dose reconstructability. It does not establish SEC eligibility by itself; rather, it organizes the evidence needed to evaluate whether occupational doses can be reconstructed with sufficient accuracy.

1. Converts Historical Issues into Reconstructability Questions

Each matrix entry links a historical issue to the specific dose-reconstruction consequence. Instead of merely noting that records are missing or disputed, the matrix explains what scientific input cannot be independently validated without those records—for example source terms, monitored populations, or exposure pathways.

2. Tests Monitoring Representativeness

The matrix distinguishes the existence of monitoring from proof that monitoring was representative. It asks who was monitored, who was not, which jobs and buildings were covered, and whether the monitored workers represent the proposed SEC class.

3. Identifies Missing Denominators

It emphasizes missing denominators such as the total number of potentially exposed workers, required bioassays, air-sampling locations, and contractor populations. Counts of samples alone cannot establish representativeness.

4. Separates Analytical Sensitivity from Historical Completeness

A sensitive monitoring instrument cannot compensate for unsampled workers, missing periods, incomplete records, or unidentified source terms. The matrix distinguishes instrument capability from historical completeness.

5. Evaluates Engineering Assumptions

The matrix compares engineering expectations—such as encapsulation or containment—with the historical evidence needed to verify actual workplace performance, including maintenance, leak testing, contamination surveys, and incident investigations.

6. Distinguishes Environmental Findings from Occupational Exposure

It separates questions about environmental releases from questions about localized workplace contamination and worker intake, keeping the focus on occupational dose reconstruction.

7. Examines Worker Population Coverage

The matrix highlights worker groups that may not be represented by routine monitoring, including maintenance personnel, contractors, temporary workers, security staff, and emergency responders.

8. Treats Classification as an Evidentiary Limitation

Rather than assuming classified work proves exposure, the matrix identifies where classification may limit independent verification of source terms, operations, worker assignments, or records.

9. Documents Remaining Uncertainties

It records unresolved questions such as incomplete leak testing, record survival, monitoring coverage, and classified-document review so that each uncertainty can be evaluated explicitly.

10. Demonstrates Cumulative Uncertainty

The matrix shows how multiple small uncertainties may interact across source terms, monitoring, worker populations, incidents, and records, potentially reducing confidence in retrospective dose reconstruction.

Overall Significance for SEC-00256

The strongest value of the Master Evidence Matrix is that it keeps every issue tied to the governing SEC question: whether the historical evidence is sufficiently complete, representative, and independently verifiable to support reliable dose reconstruction for the proposed worker class. Rather than debating isolated facts, it provides a structured framework for evaluating the cumulative scientific confidence in the reconstruction process.

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