

Safety Assessment Report (SAR)

As a result of system safety analyses, hazard evaluations, and any contractor independent testing, the contractor shall perform and document both a Safety Assessment and Health Hazard Assessment (HHA). A health hazard is defined in DI-SAFT-80106B, MIL-STD-882E provides guidance in the preparation of the Safety Assessment Report and Health Hazard Assessment. In preparing the health hazard portion of the Safety Assessment Report, the contractor shall provide a description and discussion of each potential or actual health hazard issue of concern for each subsystem or component. The contractor shall include classification of severity and probability of occurrence, and when the hazards may be expected under normal or unusual operating or maintenance conditions. The SAR shall include copies of Material Safety Data Sheets (MSDS) for all hazardous materials incorporated into the system. The SAR shall identify how the system meets the requirements of 29 Code of Federal Regulations 180 and ANSI B30.5.

Specific health hazards and impacts that shall be considered include:

- a. Noise: Identify any hearing protection and type required, (e.g., single, double, muffs, or plugs). Also identify the 85dB (A) noise profile around the tank rack.
- b. Chemical hazards (e.g., hazardous materials that are flammable; corrosive; toxic fumes, carcinogens or suspected carcinogens; systemic poisons; asphyxiants, including oxygen deficiencies; respiratory irritants; etc.)
- c. Physical hazards (e.g., acoustical energy, heat or cold stress, ionizing and non-ionizing radiation).
- d. Biological hazards (e.g., bacteria, fungi, etc.)
- e. Ergonomic hazards (e.g., lifting requirements, task saturation, etc.)
- f. Exhaust emission hazards.
- g. Other hazardous, or potentially hazardous, materials that may be formed by the introduction of the system, or by the manufacture, test, maintenance or operation of the system.
- h. Fire prevention issues.
- i. Electrical issues.
- j. Laser

The assessment shall address:

- a. The system to allow safe operation and maintenance. When feasible engineering designs are not available to reduce hazards to acceptable levels, alternative protective and measures must be specified (e.g., protective clothing, specific operation or maintenance practices to reduce risk to an acceptable level).
- b. Potential non-or less hazardous material substitutions and projected handling and disposal issues. The SAR will discuss the rationale for using a hazardous material and long term effects (such as potential for personnel and environmental

exposure, handling and disposal issues/requirements, protection/control measures, and life cycle costs) over a non-or less hazardous material. The effects and costs should be considered over the life of the systems, including the cost of handling and disposal. Identify potential non-or less hazardous alternatives if they exist and provide a justification why an alternative cannot be used.

- c. Hazardous material data. The SAR shall describe the means for identifying and tracking information for each hazard.

The SAR hazardous material evaluation shall:

- a. Identify the hazardous materials by name(s); the affected system components and processes; the quantity, characteristics, and concentrations of the materials in the system; and source documents relating to the materials.
- b. Determine under which conditions the hazardous materials can release or emit materials in a form that may be inhaled, ingested, absorbed by living organisms, or leached into the environment and if the materials pose a health threat.
- c. Characterize material hazards and determine reference quantities and hazard ratings. Acute health, chronic health, carcinogenic, contact, flammability, reactivity, and environmental hazards will be examined.
- d. Estimate the expected usage rate of each hazardous material for each process or component for the subsystems, total system, and program-wide impact.
- e. Recommend the disposition of each hazardous material identified. If for any scale of operation the reference quantity is exceeded by the estimated usage rate, material substitution or altered processes shall be considered to reduce risks associated with the material hazards while evaluating the impact on program costs.
- f. In the event the system is modified or procedural changes made after the final SAR is submitted, the Contractor shall update the SAR to reflect those modifications or changes.