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Subject: Safety Complexity Index (SCI) Report – Environmental Remediation
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Safety Complexity Index (SCI) Report – Deterministic v3.7

No AI used — deterministic model using Energy Spectrum hazards.

1) Project Overview

Project: Environmental Remediation
Company: e-SafetyPro
Submitted By: Vladimir Ivensky
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Project Type: Environmental
Description: Environmental site remediation

2) Declared Role and Inputs

Declared Role: EPCM Contractor (3) **Role Weight:** $\times 2$
Project Scale (S): 2 – Small (\$100K–1M / ≤ 25)
Team Size (T): 2 – Moderate (6–20)
Coordination Level (O): 2 – Multiple contractors

Complexity: $C = (3 \times 2) + 2 + 2 = 10$ **Normalization:** $C_{max} = 32 \rightarrow C\% = 32.3\%$

3) Hazard Screening (Energy Spectrum v1.4)

$\Sigma E = 51$; $H_{max} = 51 \times 2 = 102$

- Excavation / Trenching / Earthworks: $E=3 \times \text{RoleWeight}=2 \rightarrow +6$
- Structural Integrity / Collapse / Demolition: $E=3 \times \text{RoleWeight}=2 \rightarrow +6$
- Traffic / Mobile Equipment: $E=3 \times \text{RoleWeight}=2 \rightarrow +6$
- Electrical / LOTO: $E=3 \times \text{RoleWeight}=2 \rightarrow +6$
- Hazardous Energy (Pressure / Mechanical): $E=3 \times \text{RoleWeight}=2 \rightarrow +6$
- Hazardous Substances / Chemicals (General): $E=3 \times \text{RoleWeight}=2 \rightarrow +6$
- Asbestos / Lead / Silica / HAZWOPER: $E=3 \times \text{RoleWeight}=2 \rightarrow +6$
- Biological / Sanitation / Health Risks: $E=2 \times \text{RoleWeight}=2 \rightarrow +4$
- Environmental / Weather / Heat / Cold: $E=1 \times \text{RoleWeight}=2 \rightarrow +2$
- Noise / Vibration: $E=2 \times \text{RoleWeight}=2 \rightarrow +4$
- Public Exposure / Third-Party Interface: $E=2 \times \text{RoleWeight}=2 \rightarrow +4$
- Fatigue / Human Factors: $E=1 \times \text{RoleWeight}=2 \rightarrow +2$
- Work Stress / Mental Health: $E=1 \times \text{RoleWeight}=2 \rightarrow +2$

$H_{total} = 60 \rightarrow H\% = 58.8\%$

Hazard Summary: 7 high-energy, 3 medium, 3 low hazards identified.

4) Safety Complexity Result

Overall $= (H\% + C\%) / 2 = (58.8 + 32.3) / 2 = 45.6\%$
Result: **MODERATE complexity level**

The Safety Complexity Index reflects the overall coordination, oversight, and control effort required for this role and project scale.

5) Identified Hazard Categories (with LSR & OSHA references)

The following project-specific hazards were identified; each must be fully controlled or avoided during project planning and execution.

- **Excavation / Trenching / Earthworks** — Protective system; competent inspection; locate utilities. [*Line of Fire* – OSHA 1926.652]
- **Structural Integrity / Collapse / Demolition** — Engineering survey; bracing/shoring; exclusion zones. [*Line of Fire* – OSHA 1926.857]

1926.600]

- **Traffic / Mobile Equipment** — Spotters; routes; high-vis; separation from pedestrians. [**Mobile Equipment** – OSHA 1926.600]
- **Electrical / LOTO** — Apply LOTO; verify zero energy; qualified personnel. [**Energy Isolation** – OSHA 1910.147]
- **Hazardous Energy (Pressure / Mechanical)** — De-energize/bleed down; guard moving parts; secure stored energy. [**Energy Isolation** – OSHA 1910.147]
- **Hazardous Substances / Chemicals (General)** — SDS; substitution/ventilation; PPE; spill control. [**Health Hazards** – OSHA Subpart H/Z]
- **Asbestos / Lead / Silica / HAZWOPER** — Competent oversight; exposure plan; monitoring; decon. [**Regulated Materials** – OSHA Z / 1910.120]
- **Biological / Sanitation / Health Risks** — Hygiene/handwash; immunization; exposure control. [**Health Hazards** – OSHA 1910.141]
- **Environmental / Weather / Heat / Cold** — Water-rest-shade; cold-stress plan; wind criteria. [**Environmental Exposure** – OSHA OSHA Heat]
- **Noise / Vibration** — Hearing protection; engineering controls; HAVS limits. [**Hearing / Vibration** – OSHA 1910.95]
- **Public Exposure / Third-Party Interface** — Barricades; signage; traffic control plans; escorts. [**Public Interface** – OSHA 1926.200]
- **Fatigue / Human Factors** — Scheduling; rest periods; rotation; critical-task checks. [**Human Performance** – OSHA N/A]
- **Work Stress / Mental Health** — Workload management; support channels; escalation paths. [**Psychosocial** – OSHA N/A]

6) Purpose and Limitations

This screening estimates **project-level safety management complexity** — not incident probability.

Hazards listed are **project-specific** and may affect anyone at the site. Each identified hazard must be addressed through detailed hazard analysis, **HASP**, and task-specific **JHAs**.

Results should guide resource allocation and planning for project HSE management. For formal duty-of-care alignment, use the OSHA Multi-Employer Role Tool.

