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INTERNATIONAL NETWORK ON SOIL POLLUTION

CHANNELLING COLLECTIVE ACTION TOWARDS ZERO POLLUTION

INSOP Checklist for Soil Remediation

Sustainable management and remediation
Working group priority meeting
17 January 2023

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The Remediation Check List

Soil Remediation:

The process of restoring contaminated soil to its original or productive state by

reducing the occurrence of pollutants or improving physically, chemically or biologically damaged soil to acceptable levels

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The Process:

Is Complex:

→ Involves Multiple Steps:

→ Requires:

- ✓ Extensive planning,
- ✓ Effective execution
- ✓ Use of scientific principles
- ✓ Trained, qualified and competent teams

Communication, Follow-up, Communication, Societal Support, Communication, Regulatory Support, Communication

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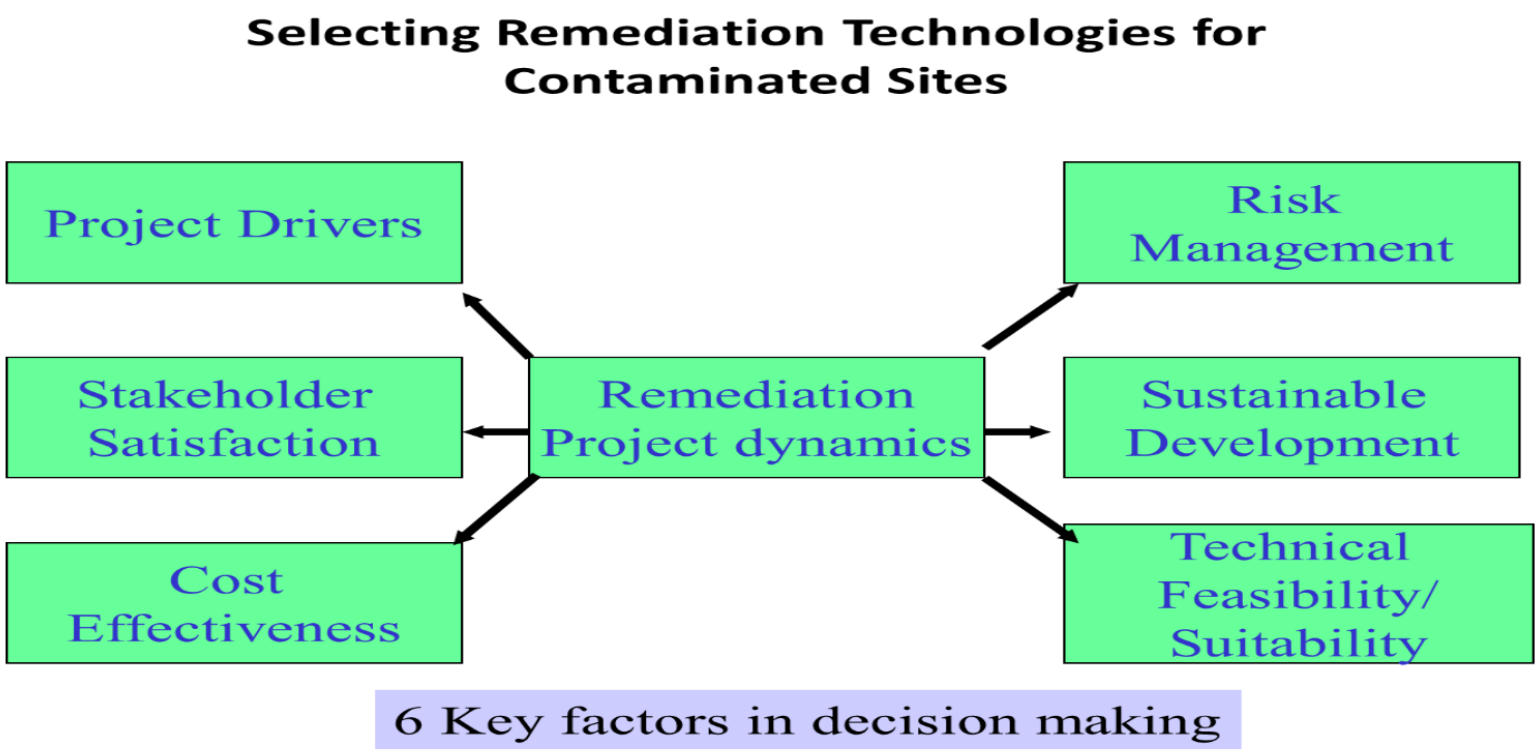
The Process:



Communication, Follow-up, Communication, Societal Support, Communication, Regulatory Support, Communication

Soil Remediation as a Key to Sustainable Soils Management (SSM)

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Principles of SSM as intended through the United Nations Global Compact

https://d306pr3pise04h.cloudfront.net/docs/issues_doc%2Fagriculture_and_food%2Fsoil-principles.pdf

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Sustainability as a Guiding Principle
(as compared to “sustainable remediation”)

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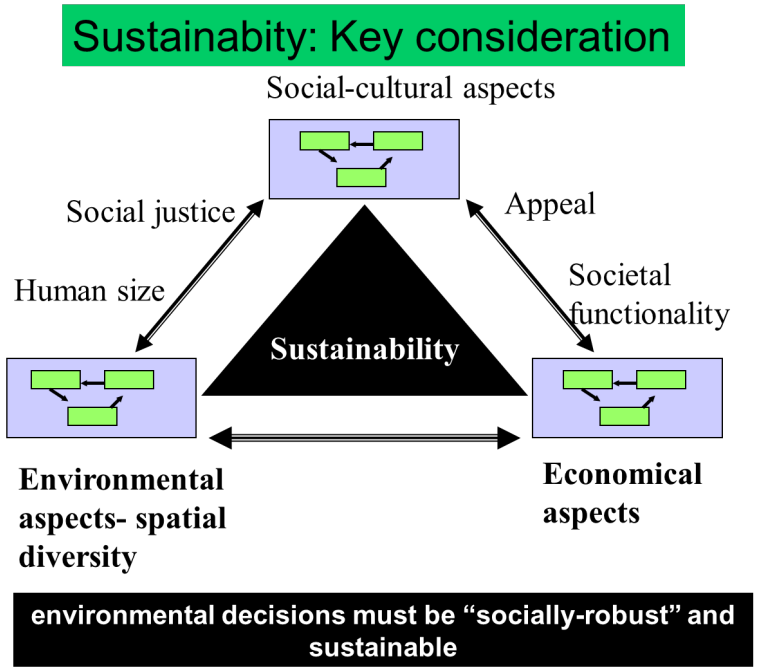
UN Definition of Sustainability

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

The Three Pillars of Sustainability



“Sustainable Remediation”

- Focus on contaminant risk reduction that improves the environmental, social and economic value of the remedial work.
- Remediation that limits negative environmental impacts, & improves social and economic benefit, creates resilience.

ISO 18504:2017
Soil quality – Sustainable Remediation
https://www.iso.org/standard/62688.html

ITRC SRR-1
https://srr-1.itrcweb.org/

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The Checklist:
A Ten-Step Program

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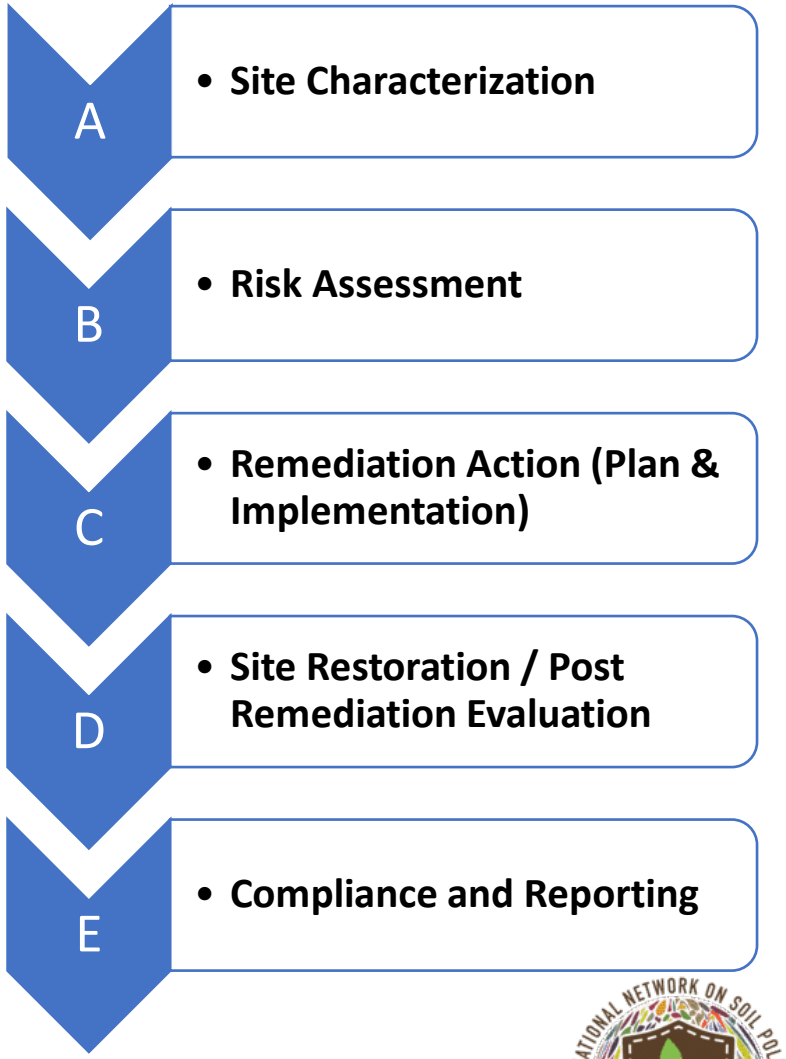
A
1. Identifying the problem areas
2. Preliminary Investigation
3. Detailed Investigation

B
4. Risk Assessment

C
5. Remediation Plan Development
6. Remediation Implementation
7. Monitoring (Verification/Performance/Compliance

D
8. Site Restoration (following remedy implementation)
9. Post Remediation Evaluation

E
10. Compliance and Reporting



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A. Site Characterization

Objective is to develop a representative, informational, conceptual site model (CSM) through which

Data gaps can be identified,
Risk assessment can be calculated and evaluated, and
Remedial planning / risk management actions can effectively, economically, and efficiently implemented

Preliminary Investigation (Site review & inspection)
Stakeholder interviews
Data compilation & Analysis

Detailed Investigation
Planning, sampling, analytical, quality check
Data interpretation
Reporting & Communication

- **Source Identification**
- **Source occurrence, extent, distribution**
- **Fate, transport, attenuation potential of contaminants**
- **Receptors and points of exposure**
- **Pollutant target levels (regulatory review)**
- **Data gaps**

Preliminary CSM -> Data -> Evaluate -> Data

Mature/next Phase CSM

Refer to the UN's Global Soil Laboratory Network for Soil Analysis Approach and Support

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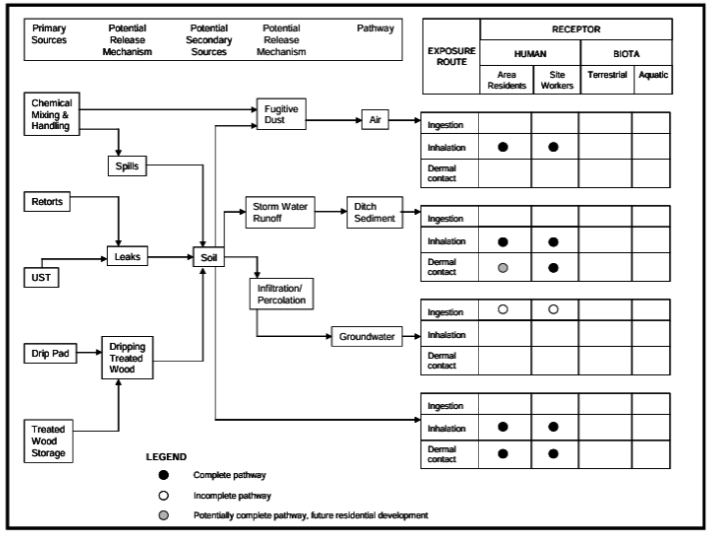
B. Risk Assessment

"The risk assessment process involves identifying and assessing the hazards posed by contaminants present in the soil, as well as evaluating the likelihood and magnitude of potential exposures to humans, animals, and the environment."

Sources --Releases-→ Receptors



Site Characterization Results

Hazard Identification

Exposure Assessment

Toxicity Assessment

Risk Characterization

Risk Management

Risk Management Plan: Measures & Objectives → Remediation Plan

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C: Remediation Action Plan - Implementation

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Site Characterization (CSM) Risk Management Plan
Regulatory Objectives

Remediation Plan Development

Technologies/Methods	Social/Community Involvement	Implementation Plan

Remediation Implementation

Constructability	Communication	Immediacy

Monitoring & Sampling

Media & Analysis	Data Evaluation / QA-QC	Intervals & Duration

Remedial Action Plan includes:
Technology Identification
Sampling/Analysis Plan
Waste Management
Stakeholder Engagement
Cost / Budget Analysis
Reporting / Documentation

Consideration of Timing – *Emergency risk reduction v. long-term remedial approach for sustained protection*

Monitoring plan may evolve over time and as conditions change

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D1. Site Restoration – Revegetation

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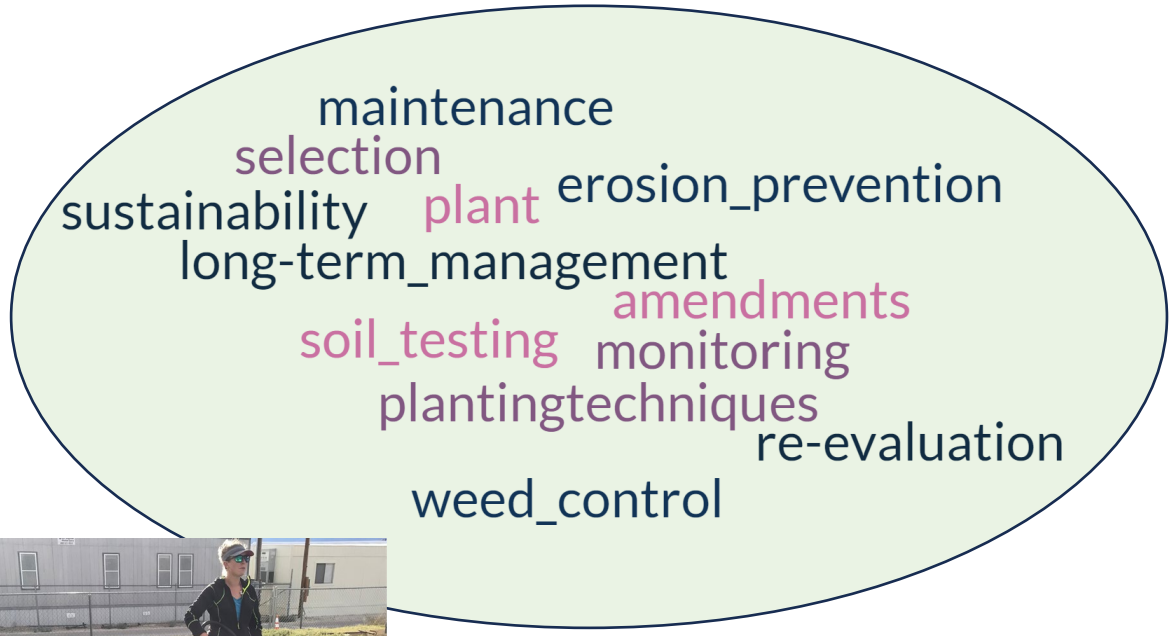

- After soil pollution remediation, the measures of restoration and revegetation can restore the soil to its intended use or natural state.
- Measures to promote soil fertility, structure, and biological activity should be designed and implemented.
- Reintroduce native vegetation or appropriate plant species to stabilize the soil and enhance its quality.
- The specific measures of restoration and revegetation after soil pollution remediation may vary depending on the nature and extent of the pollution, the site conditions, and the regulatory requirements.

D2. Post Remedial Evaluation

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E. Compliance & Reporting

Compliance includes maintaining proper documentation of all activities including:

- Permits
- Sampling results
- Remediation reports

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Circling Back to the Checklist

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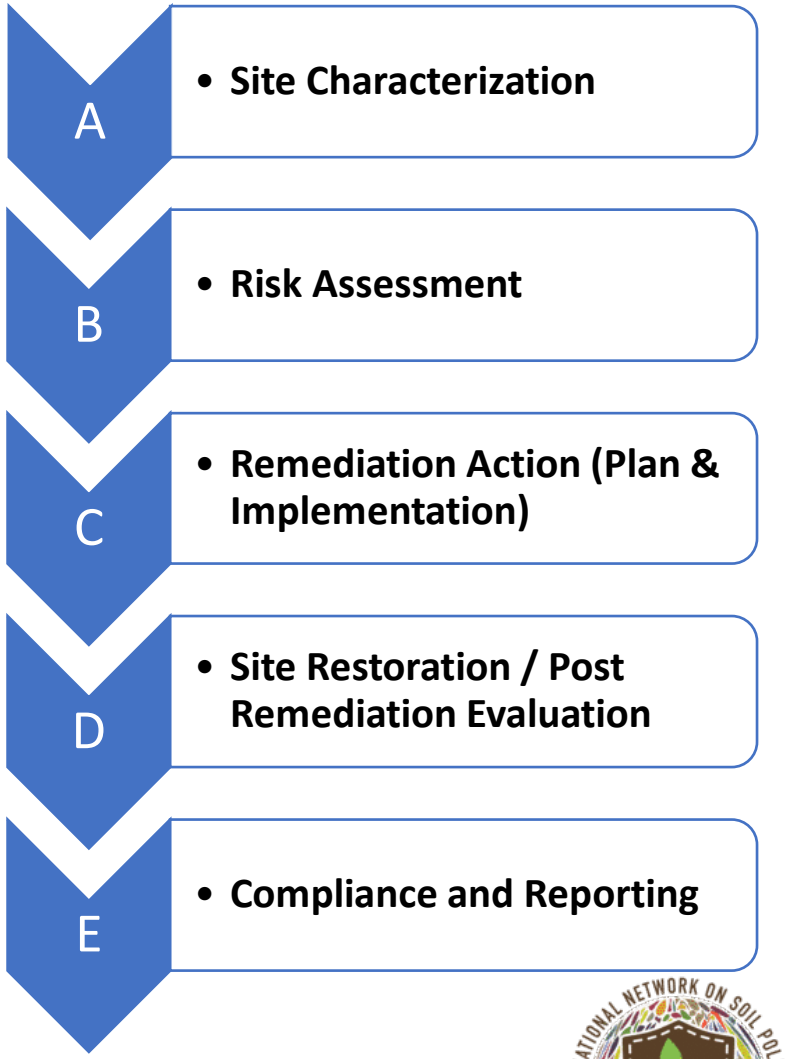

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Closing

The INSOP Checklist for Soil Remediation is in final draft preparation. Comments from Working Group Members to be sought for final publication.

Thank you to the Lead Contributors in developing the Checklist

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Thank you for your attention.
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