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Tailored Improvement of Brownfield Regeneration in Europe

SEVENTH FRAMEWORK PROGRAMME
THEME 6 "ENVIRONMENT (INCLUDING CLIMATE CHANGE)"

National Workshop: ***Rehabilitation of contaminated soil and sites***

"*Present status for Soil Rehabilitation in Romania - Priorities*"

National Environmental Protection Agency
Soil and Subsoil Protection Office

Bucharest - ROMANIA
Date: July 2nd, 2012

Content

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Currently, there are several pieces of legislation and actions which regulate the management of contaminated sites. The following legal documents were taken into consideration:

ORDINANCE no. 195 from 22 December 2005 approved by the LAW 265 from 29 June 2006

This is the fundamental piece of legislation for environmental protection in Romania. The main regulation act for all activities are:

- the environmental Agreement for plans and programs (Environmental impact study must be provided);
- the environmental Agreement for: activity owner change, activity abolition, bankruptcy, activity ending (based on Environmental audits and risk assessments);
- the environmental Agreement in the project phase (Environmental impact study must be provided);
- the environmental permit for existing activities (based on Environmental audits and risk assessment);

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- integrated environmental Permit for IPPC activities (based on site assessment and specific application and risk assessment).

Chapter IX is dedicated to soil and underground protection. Maintaining the environment in a proper state is an obligation of the land owners and users.

Chapter XIV, Section 3, mentions that environmental damages have to be paid by tacking into account the "polluter pays" principle.

ORDER no. 184 from September 1997 for approving the Procedure for carrying out the environmental balance (audit) studies

Definitions:

-Environmental audit level 0 – a checking sheet for the activity.

-Based on this sheet, the environmental authority may establish the necessity of higher levels audits or risks assessments before granting the environmental permit for that activity.

- Environmental audit level 1 – environmental study: data and reference material collection (without sampling and laboratory analysis). This should include all the elements of a technical analysis of environmental aspects, in order to make a decision regarding the size of potential or effective impact on the site.

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- Environmental audit level 2 - Site investigations, to identify the pollution size (with sampling and laboratory analysis)

- Risk assessment: the analysis of the probability and gravity of the main components of an environmental impact.

This act also includes the recommended content of the studies mentioned above and also the minimum content of the study reports.

An audit level 1 should contain also a chapter entitled **"The soil pollution possibility"** in which all the past and present activities from the areas are considered, **"to establish the potentially polluted areas"**

For an audit level II is mentioned: **The pollution of the soil must be established based on the laboratory analysis of the samples.** The sampling points must be established tacking into account: the pollution sources, the soil samples are collected from 2 different depths (5 and 30 cm). Also a minimum number of points related to the size of the area is presented.

Other related aspects of this topic are: recommendations regarding underground water sampling, the study of soil gases and vapours, the **minimum analyses** that must be performed, **depending on the area history, a risk assessment methodology, and a classification of the activities with negative impact on the environment.**

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ORDER no. 756 from November 3 for approving the Regulation regarding environmental pollution assessment

This act established the procedures and technical norms used to **identify the environmental state and the environmental damages in order to assign the remediation responsibilities.**

Several basic concepts are defined : competent authority, emissions, **risk assessment, impact assessment, significant and potentially significant pollution, alert limits and intervention limits, remediation objectives.**

The **alert limits** warn the authorities about a potential pollution and could lead to additional monitoring and emission reduction measures.

The **intervention limits** indicate the pollution and could lead to risk assessment studies, additional investigations and emission reduction measures.

Chapter III on "Regulations regarding soil pollution" sets forth:

- sensitive use of soil: resident and leisure areas;

- **less sensitive use**: industrial and commercial areas

If the **alert limits** are exceeded but the values are under intervention limits there is a potential impact and pollution prevention measures and additional monitoring are imposed;

If the **intervention limits** are exceeded there is a clear soil impact and the use is not allowed any more. Also a risk assessment is required (the costs are supported by all land owners, if someone responsible with soil pollution cannot be identified). The study objectives are established taking into account the future use of the area. The land used for sensitive use must be under appropriate alert limits.

Based on risk studies, the necessity to take remediation measures should be established.

In Annex 1 are presented normal values, alert limits and intervention limits for both sensitive and less sensitive uses: heavy metals, cyanides, sulfocianydes, fluorine, bromine, sulphides, sulphates, BTEX (benzene, toluene, ethyl benzene, xylen), hydroxyl benzene, polycyclic aromatic hydrocarbons, petroleum hydrocarbons, chlorine benzenes, chlorine phenols, Polychlorinated biphenyls, dioxins and furans, pesticides. Other indicators could be considered based on studies performed by specialized units.

In **chapter V "Regulation regarding surface and underground water pollution"** the impact and the necessity to take measures are settled in am analogous way as in chapter III. The alert limit for water is established as 70% from intervention limit. If there are not limits in others regulations, these limits should be established based on studies performed by specialized units. In Romania there are no regulations with clear limits for underground water quality.

ORDER no.242 from 26 March 2005 for approving the organization of the National system for integrated monitoring of soil, for surveillance, control, and decision making to reduce the contribution of pollutants resulted from agricultural sources and for the management of the organic residues resulted from animal husbandry, in nitrates pollution vulnerable areas and also for approving the Program for setting up the National System organization.

This act sets forth: the organization and operation of the National system for integrated monitoring of soil, for surveillance, control, and decision making to reduce the contribution of pollutants resulted from agricultural sources and for the management of the organic residues resulted from animal husbandry, in nitrates pollution vulnerable areas.

The competences are:

The National Research and Development Institute for Pedology, Agrochemistry and Environmental Protection-ICPA Bucharest together with the **National Administration "Romanian Waters"** should draw up the surveillance and control program, procedures and instructions for pollutants monitoring data, methodologies for reviewing the vulnerable areas.

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The Romanian Government Decision no. 1408/2007 regarding the investigation and assessment modalities of the soil and subsoil pollution

This act regulates the procedures for investigation and evaluation of soil and subsoil pollution, in order to identify damage caused to the soil and subsoil, and to determine liabilities for the rehabilitation of the geological environment :

- the investigation for the assessment of the contamination of the geological environment is achieved by geological and pedological methods;

- the investigation and assessment of soil and subsoil pollution is the obligation and responsibility of the economic operator or owner of land who carried out or performs polluting or potentially polluting activities in the geological environment;

- the investigation and assessment of soil and subsoil pollution is made in the following cases:

a) to establish a pollution hazardous to human health and the environment;

b) the development of the environmental balance;

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c) to establish the environmental obligations, if changing the legal status of the land on which an activity with environmental impact was carried out;

d) for the identification of potential sources of pollution of the soil and subsoil;

e) periodically track progress which the remediation of contaminated sites has achieved by monitored natural attenuation or long-term remediation methods;

f) to the post remediation monitoring programs;

g) for the accidents that lead to a pollution of land, after removal of the source and pollutant discharge into the geological environment;

-the investigation and assessment of geological environment pollution on site and adjacent areas, is performed in the following stages:

a) the analysis and interpretation of existing data;

b) the preliminary investigation and assessment,

c) the detailed investigation and assessment;

-every stage of investigation is materialized in a report which is submitted for analysis to the authority that has established the need of the investigation stage;

- the detailed investigation and assessment results are included in the final geological report of investigation and assessment of geological environmental pollution, which is submitted to the competent authority for environmental protection;

-the competent authority for environmental protection analyzes the geological investigation report and, according to its conclusions, decides the need to achieve the risk assessment study, the feasibility study for the remediation program of the affected areas , or the technical remediation project, as appropriate;

- the costs of the investigation stages and of the documents mentioned achievement, shall be borne by the operators / land owners:

- the methodologies and content of the geological investigation and assessment report of soil and subsoil on stage, the criteria and indicators for the environmental pollution assessment will be published in a technical guide, approved by joint order of heads of central authority for the environmental protection and sustainable development, central public authority in the domains of economy and finance and central public authority in the domain of agriculture and rural development, within 6 months from the effective date of this decision.

The Romanian Government Decision no. 1403/2007 regarding the remediation of those areas where the soil, subsoil and terrestrial ecosystem where affected

This act establishes the legal framework for the cleaning/remedial activities, and / or ecological reconstruction areas where the soil, subsoil and terrestrial ecosystems have been affected and provides in essence the following:

- the central authority for environmental protection, through subordinated units, establishes the necessity of the measures to restore areas where the geological environment and the terrestrial ecosystems have been affected, monitor and control the measures contained in the technical project for cleaning, repair and / or ecological restoration;

- the remediation of the geological environment and of the affected terrestrial ecosystems consists in bringing them closer to their natural state, by the application of clean-up/repair measures and/or ecological restoration, complementary and compensatory ;

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- the remediation methodologies of the geological environment are established by the competent authority for environmental protection after analysis of the final report of investigation and assessment of the geological environment pollution and, where appropriate, risk assessment study, taking into account:

a) the characteristics and functions of soil, geological formations and groundwater;

b) type and concentration, the level of risk posed by pollutants, harmful organisms or microorganisms;

c) distribution of pollutants in the geological environment;

d) the volume of polluted soil or subsoil that requires treatment, location, depth and accessibility;

e) the objectives of the geological environment rehabilitation and the time required to achieve them;

f) the cost / benefit ratio of the remediation methodologies;

g) the use of the land after the restoration of geological environment and using it, given the development potential of the area, or expected future land use;

- the polluter has the obligation to meet the costs of the remediation measures of the geological environment and of the affected terrestrial ecosystems.

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2. Current legislative priorities

Overall the provisions of the two government decisions previously mentioned, the entry into force, represented an important step in regulating the issue of contaminated sites, joined in the general trend of legislation in EU countries on their management.

Unfortunately, some provisions of the two government decisions, in time, could not be performed for more or less objective reasons, but the main deficiency is that:

- these decisions were not followed by subsequent implementation legislation;
- were not followed by the revision of some definitions;
- the documentation that is developed in the stages of the management of contaminated sites were not defined in the Environmental Law;
- their provisions were not correlated with the other regulations.

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For effective management of contaminated sites and to accelerate structural fund grant to finance the rehabilitation programs of historically contaminated sites and the redevelopment of industrial sites located in the state of ruins, it is necessary to review and revise the current framework of contaminated sites, as follows:

- *the development of the National Strategy for Contaminated Sites Management*

- the review provisions of chapter. 11 - Protection of soil, subsoil and terrestrial ecosystems of the GEO 195/2005 on environmental protection, as amended and supplemented;

- the Environmental Law review and input into the definition of "contaminated site" specifying the criteria /procedure for determining the historical contamination versus the recent contamination, defining the documentation that elaborates the stages that involve the management of contaminated sites;

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- the review of two decisions by the government, by merging their provisions into a single government decision, on the special modification in accordance with generally accepted meaning in the legislation of EU countries that are more advanced in contaminated sites management, redefinition of the contaminated site/potentially contaminated site concepts, specifying the succession of the obligatory steps in the contaminated site management, setting realistic targets in managing contaminated sites in accordance with the current capabilities (institutional and financial) and a unitary approach of the assembly soil-unsaturated zone-ground water-contaminants considering the new provisions of the framework Directive regarding the groundwater and surface waters;

- the development of a specific procedure under the new government decisions regarding the inventory, investigation, risk assessment and the remediation of contaminated sites;

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- the review/completion of the Order 756/1997 approving the Regulation on the assessment of environmental pollution;

-the development of methodological guidelines on the methods of investigation and remediation of contaminated sites including REPRESENTATIVE SAMPLING GUIDES FOR :

- soil and rocks from unsaturated and saturated zones;
- groundwater;
- surface water and sediment;
- soil gas and VOC;
- VOC in ambient air from outside and inside buildings;
- terrestrial and aquatic flora, fruit and vegetables;
- animal products;

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- wastes
-the applicabity of DP technologies in the site investigation
-the applicabity of geophysical methods in the investigation of contaminated sites / the monitoring of the evolution of remedial programs or post- remedial monitoring;
- the applicability of field analytical measurements;
- the investigation of the level of the contamination of the buildings and facilities on abandoned industrial sites;
- methodologies for the execution, equipment and development of the investigation and monitoring wells;
- technical project of site investigation;
- fields and laboratory QA/DQ procedures;

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- sample containers and preservation techniques ;
- chain-of-custody procedures;
- decontamination procedures for sampling equipments and instruments;
- laboratory operations and analysis
- data assessment procedures
- methodology of historical investigation and site inspection;
- remedial methodologies;

…and many others

-the development of the methodologies for risk assessment, to be approved by joint order of the leaders from government environmental protection and forestry, health, agriculture and rural development;

-the preparation of a draft government decision on specific methodology to achieve feasibility studies of remedial programs;

-the review of the guides on accessing European grants and their correlation with the specific provisions of the contaminated sites legislation.

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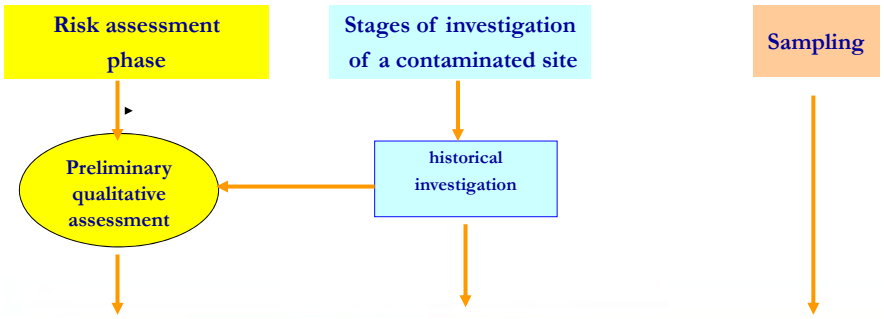
3. Relationships between risk assessment studies and the stages of investigation and sampling

Relationships between risk assessment studies and the stages of investigation and sampling



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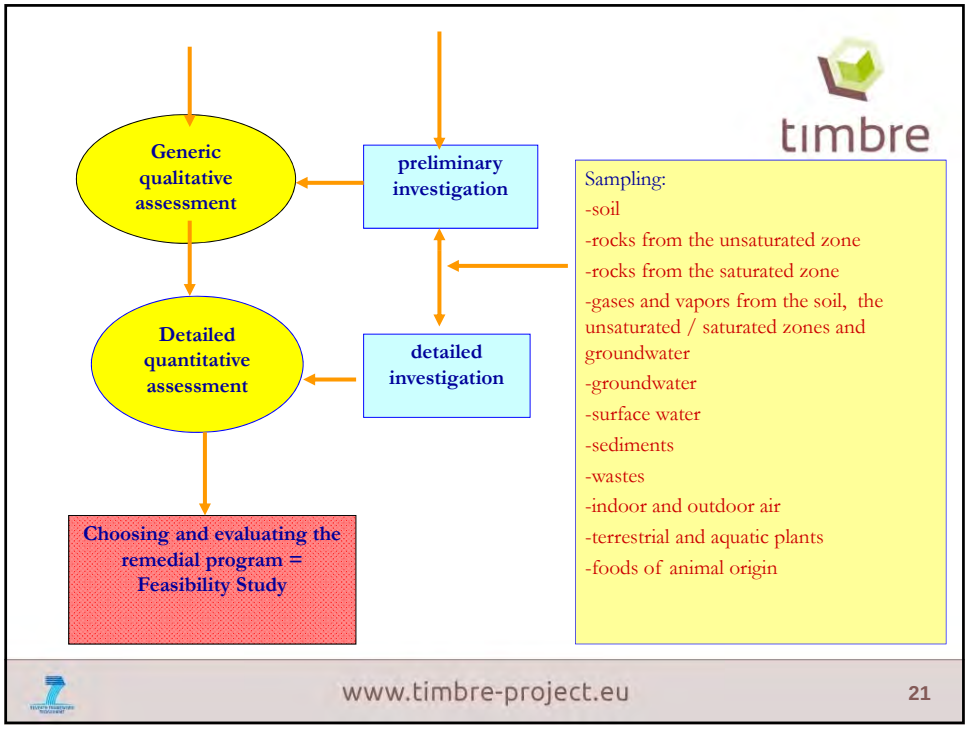
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Generic qualitative assessment
preliminary investigation
Detailed quantitative assessment
detailed investigation
Choosing and evaluating the remedial program = Feasibility Study
Sampling:
-soil
-rocks from the unsaturated zone
-rocks from the saturated zone
-gases and vapors from the soil, the unsaturated / saturated zones and groundwater
-groundwater
-surface water
-sediments
-wastes
-indoor and outdoor air
-terrestrial and aquatic plants
-foods of animal origin
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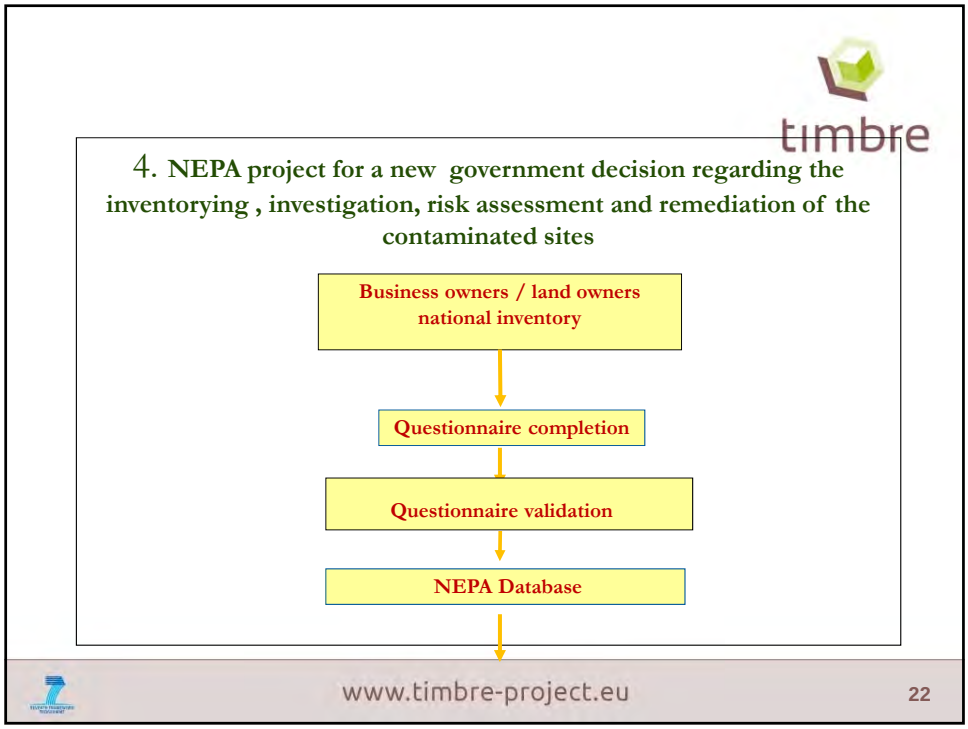
21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4. NEPA project for a new government decision regarding the inventorying , investigation, risk assessment and remediation of the contaminated sites
Business owners / land owners national inventory
Questionnaire completion
Questionnaire validation
NEPA Database
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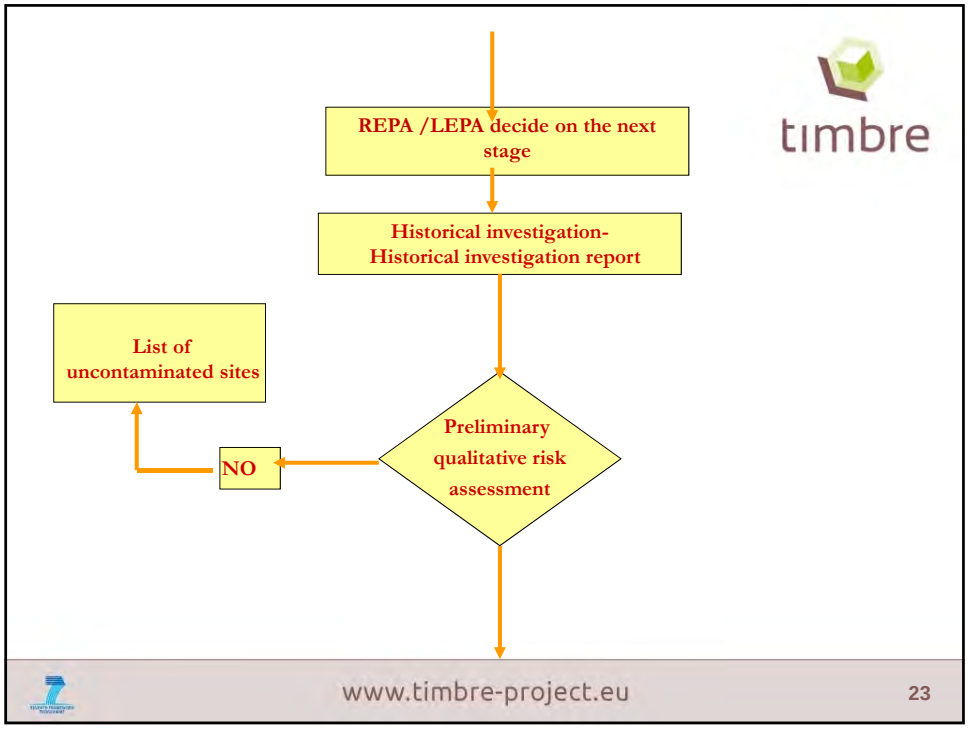
22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REPA /LEPA decide on the next stage
Historical investigation- Historical investigation report
List of uncontaminated sites
Preliminary qualitative risk assessment
NO
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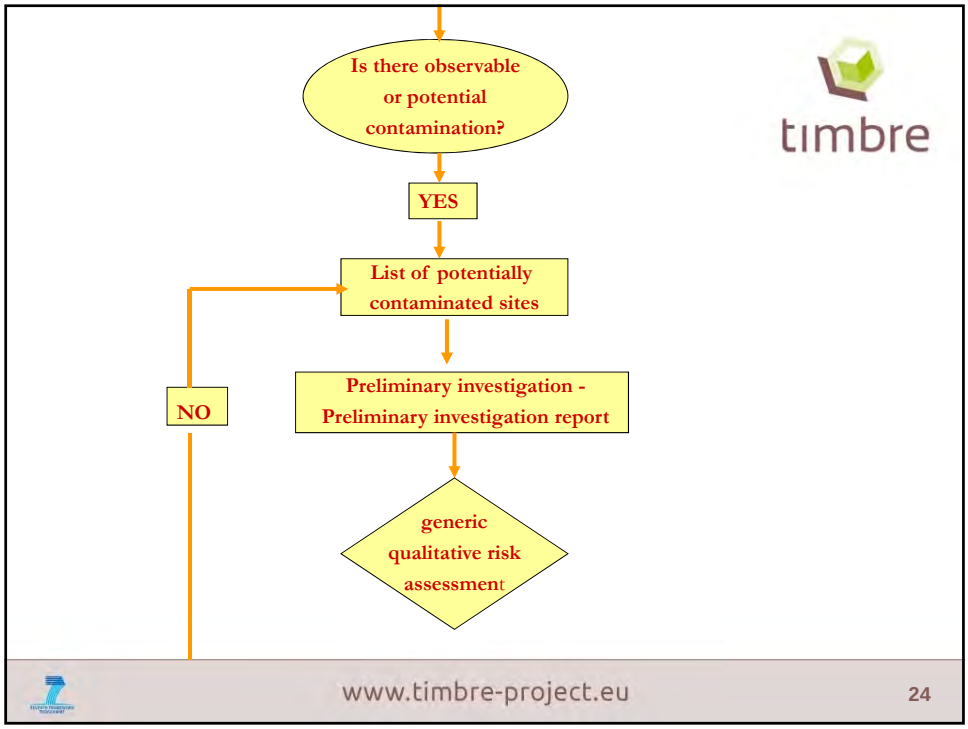
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Is there observable or potential contamination?
YES
List of potentially contaminated sites
Preliminary investigation - Preliminary investigation report
generic qualitative risk assessment
NO
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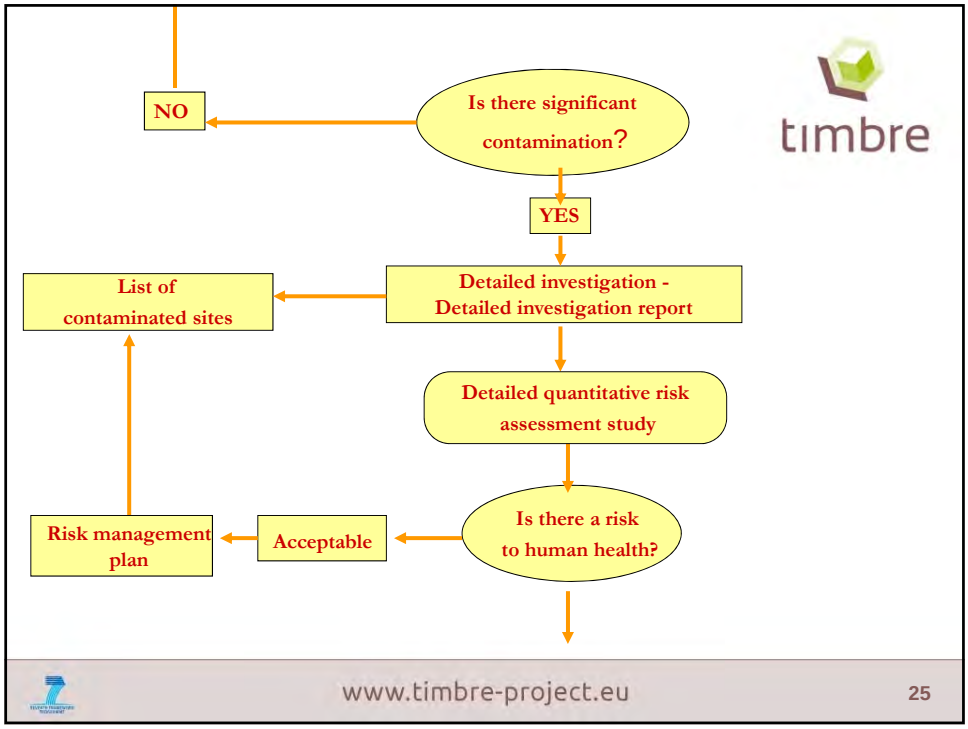
24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NO
Is there significant contamination?
YES
List of contaminated sites
Detailed investigation - Detailed investigation report
Detailed quantitative risk assessment study
Risk management plan
Acceptable
Is there a risk to human health?
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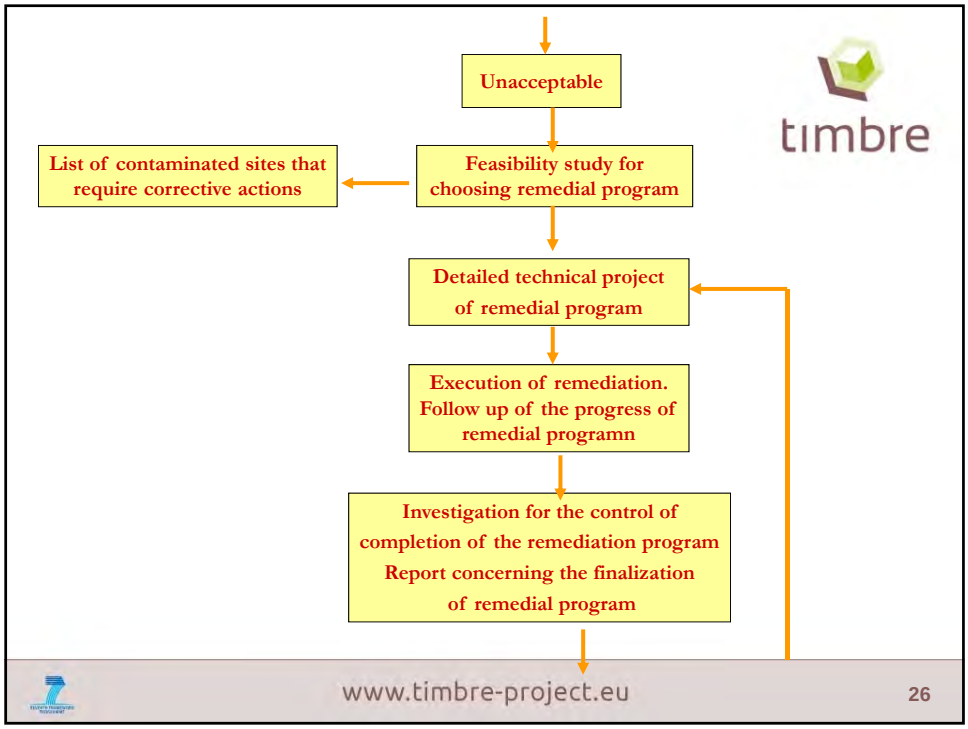
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Unacceptable
List of contaminated sites that require corrective actions
Feasibility study for choosing remedial program
Detailed technical project of remedial program
Execution of remediation. Follow up of the progress of remedial programn
Investigation for the control of completion of the remediation program Report concerning the finalization of remedial program
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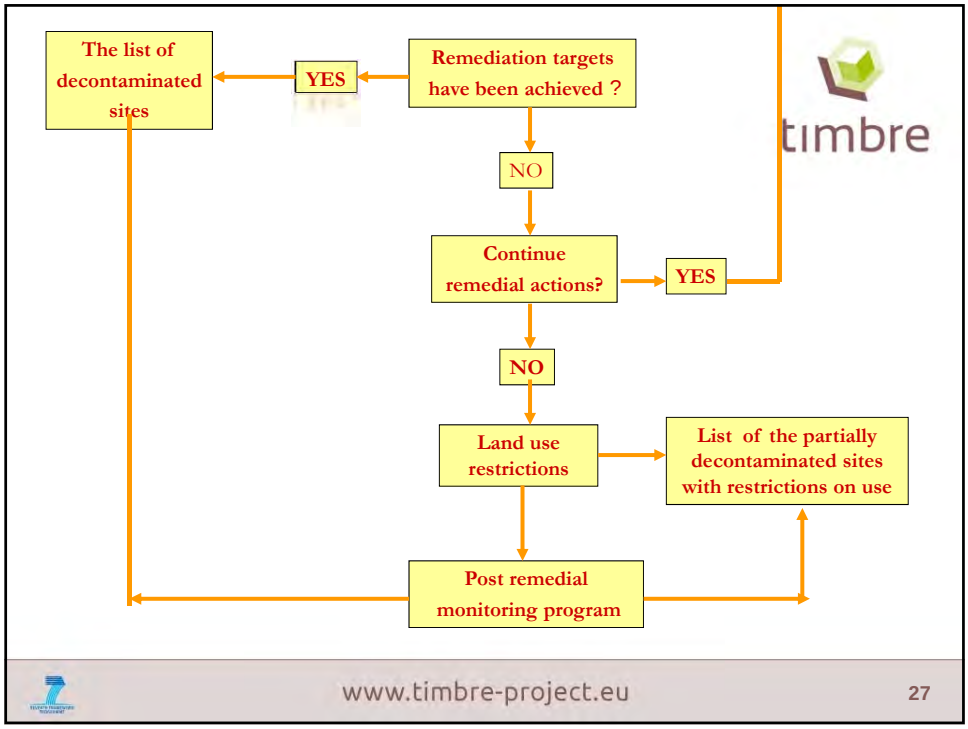
26


The list of decontaminated sites
YES
Remediation targets have been achieved ?
NO
Continue remedial actions?
YES
NO
Land use restrictions
List of the partially decontaminated sites with restrictions on use
Post remedial monitoring program
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27


VĂ MULȚUMESC!
Thank you!
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28