



## INTERNATIONAL COMMITTEE ON CONTAMINATED LAND

### QUESTIONNAIRE ABOUT LEGAL FRAMEWORK FOR SOIL/SITE CONTAMINATION MANAGEMENT

#### **COUNTRY: ITALY**

#### **CONTACT FOR FURTHER INFORMATION:** (Name / Email address)

Antonella Vecchio / [antonella.vecchio@isprambiente.it](mailto:antonella.vecchio@isprambiente.it)

Francesca Quercia/ [francesca.quercia@isprambiente.it](mailto:francesca.quercia@isprambiente.it)

Soil Protection Department of Italian Institute for Environmental Protection and Research (ISPRA)

Thanks to Eugenia Bartolucci and Marco Falconi of the Soil Protection Department of ISPRA for their support.

#### ***OVERALL CONTEXT***

1. Does your national policy have a specific definition of “contaminated site”, “contaminated soil”? If yes, please provide the definition.

The following definitions of “potentially contaminated site”, “contaminated site” and “not contaminated site” are reported:

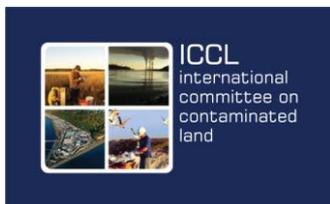
*Potentially Contaminated Site: “a site where the concentrations of one or more chemicals in the environmental media (soil, sub-soil and groundwater) exceed ‘Contamination Threshold Concentrations’ (CTCs, i.e. screening values for residential and industrial commercial land uses) and needs a detailed site investigation followed by a site-specific risk assessment to evaluate the contamination level and the ‘Risk Threshold Concentrations’ (RTCs, i.e. site specific target values)”*

*Contaminated Site: “a site where ‘Risk Threshold Concentrations’, derived by a site-specific risk assessment carried out on the basis of a detailed site investigation, are exceeded”*

*Uncontaminated Site: “a site where contamination in the environmental media (soil, sub-soil and groundwater) is below CTCs or, if CTCs are exceeded, is below the RTCs derived by a site-specific risk assessment.*

No definition of “contaminated soil” is reported in the legislation.

2. Is Groundwater included in this definition? **Yes.**
3. Does your policy on contaminated sites/land/soil include other definitions (i.e. brownfield, sediment)? **No.**
4. Which sources are you considering? Industrial operations? Transport? Urban contamination? Etc.



The main sources of contamination considered are industrial/commercial sites (most of which are gasoline stations), abandoned wastes and landfills.

## LEGAL FRAMEWOK

5. Does your country have legislation with respect to contaminated land management?

a. Whatever the situation is, please be precise if it's a specific or a common legislation, if integrated in a more general one (including prevention of emissions, soil protection, land planning, environment & health, etc.)

Legislation on "Contaminated Sites Remediation" is included in Part IV, Title V of the Legislative Decree n. 152/2006 - "Environmental Code". The same Decree includes also:

- Environmental Impact Assessment, Environmental Strategic Assessment,
- IPPC,
- Soil Protection,
- Water Protection and Water Management,
- Waste management (Part IV, where contaminated sites are addressed)
- Air Emissions and Air Quality,
- Environmental Liability

b. If there is no legislation, please be precise how you tackle the problem.

c. What are the main policy objectives? Policy objectives are not clearly specified within contaminated sites legislation.

d. What are the foundational principles on which the national policy is based? (e.g., polluter pays, risk-based, fit-for-use, stand-still, transparency, ...). Polluter pays principle is the basis of the environmental liability regulation; a risk based and fit-for use approach is applied for the management of contaminated sites (see definitions at point 1).

6. What is the Chain of Liability for the management of contaminated land?

a. Polluter? Land owner? Last operator? Occupier?

The costs of "potentially contaminated sites" investigation and remediation, if the site is thereof identified as "contaminated", are in charge of the polluter (i.e. the subject responsible for the contamination), in application of the EU "polluter pays principle".

However if the the subject responsible of the contamination cannot be identified or cannot pay for site investigation and remediation, the land owner, or another subject interested in the site redevelopment, may carry out these activities.

Public authorities are responsible for identifying the polluter and, in case of no liable subject or not economically sustainable remediation



costs (orphan site), public funds are available at local or national level to carry out investigation and remediation following a “priority list”.

However the land owner, after discovering the potential contamination of the site, has the duty to apply “prevention measures” in order to limit or avoid a potential environmental damage.

After completion of an “orphan site” remediation and redevelopment on behalf of public authorities, if the land owner is not interested or is not able to refund the relevant costs, the site property is transferred to the public with a “real burden” mechanism.

Besides the “real burden” mechanism, other instruments aimed at collecting public funds for contaminated sites remediation, are “environmental liability procedures”.

- b. Is there any difference between new and historic contamination?

No.

- c. Can a responsible party pass on the liability to a purchaser? (under statutory law? Contractually?)

There is no specific law for transferring environmental liability at contaminated sites, since the matter is regulated within property transaction agreements. In these cases a “due diligence” procedure is envisaged. However if no statement about site contamination is included in the agreement, recent orientations of the “supreme court of justice” in Italy tend to assign to the buyer the burden of management/remediation activities, since he should have been diligent in assessing the “environmental passivity” of the area. The buyer may then ask to the seller to refund the costs of these activities.

- d. Do you separate the obligation to remediate soil pollution and the liability regarding the damage caused by soil pollution and the related remediation measures?

In Italy there is a duty for site investigation remediation in charge of the polluter. However current legislation on environmental liability states that if remediation is not feasible or is not economically sustainable, or is only partial or delayed without justification, then the polluter is responsible also for a “complete” (if remediation was not carried out at all) or “partial” environmental damage, that may be refunded to public authorities with an equivalent amount of money.

- e. Are you facing specific situations (e.g. privatization of the industrial activities, war impacted areas, ...) needing special programme?

There is a list of 39 Sites of National Interest whose management is under the direct care of the Ministry for the Environment.

According to current legislation these sites have been defined on the basis of the following criteria:

- contamination affects areas of particular environmental/cultural/landscape value;
- human health risk – as determined by exceeding RTCs- is high with respect to site extension and population density;
- socio-economic impact of contamination is relevant;



- contamination may represent a risk to historical and cultural heritage;
- Remediation management concerns the territory of more than one administrative region.

Among the sites identified according to above criteria, for the definition of a Site of National Interest, two other conditions should be verified:

- actual or historic presence of oil refining activities or of steel and chemical plants;
- Presence of actual or historic mining activities and of asbestos contamination.

7. Are there any specifications at regional / local level?

Specific technical and management aspects, not covered by the national legislation, may be addressed by specific regional laws. As an example, before the entering into force of the national regulation on the management of excavated soil, many regions issued and applied their regional laws.

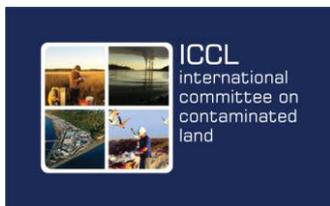
8. Are there specifications for site closure? **No.**

9. Is there any legal requirement to conduct investigation for potential contamination in the sale of the property? **No.**

10. Does your national policy have any kind of inventories/registers? If yes, please be precise regarding which sites are registered, how the data are collected and if the databases are public.

According to former legislation on contaminated sites management in Italy (Ministerial Decrees n.471/99 and n.185/89), Regions were obliged to develop Regional Remediation Plans, including a list of “potentially contaminated sites” (defined as sites where potential polluting activities had taken place) together with a prioritisation of them for investigation needs. Even if after 2006, with Legislative Decree n.152/06, the definition of “potentially contaminated sites” has changed (to “sites where CTCs are exceeded”), some Regional Remediation Plans still contain the original list of “potential polluting activity sites”. Some of these sites are not investigated yet.

According to current legislation, registers of “sites to be remediated” (i.e. “contaminated sites”) have been developed at the regional level. The contents of the registers are different among regions and some regions have not yet completed them. However information on site location, type of polluting activity (where known), contamination nature (type of contaminants), current management step, risk reduction measures adopted is included in all available registers. This information, and in particular the progress in management of contaminated sites, is periodically collected at national level from the regions. Not all the information available at regional level is public, but collected national data are published in the Environmental Data Yearbook.



11. What are the strong, weak points and the major bottlenecks with respect to the current regulations in your country?

One of the most critical aspects in the current legislation is the lack of a systematic approach for addressing contamination, and in particular historic contamination. The management procedure for both historic and new contamination is the same.

In both cases the procedure starts with a voluntary communication from the polluter or from the site owner to public authorities either of:

- an event that may contaminate soil and groundwater,
- or
- of an historical contamination discovery.

This communication has to be quite immediate since the polluter or the site owner has 24 hours for informing authorities and 24/48 hours for taking prevention and safety measures to avoid the spreading of contamination of soil and groundwater contamination and/or the worsening of environmental damage.

These “emergency” procedures do not allow for an appropriate planning of activities when managing historical contamination.

Another critical aspect concerns the need of a detailed investigation and site-specific risk assessment at all kind of sites, including small areas with simple contamination patterns. This implies the growth of investigation costs and a long time for the conclusion of the administrative procedure.

Perhaps the most critical aspect is the origin of the CTCs as generic “screening values” for soil and groundwater and their relationship with site-specific human health risk assessment which has to be carried out whenever CTCs are exceeded.

In fact the non clearly risk-based derivation of those screening values – which are listed in the legislation for about one hundred contaminants - makes them in many cases “endemically” not coherent with site specific risk assessment criteria and methodologies which are given in a specific technical annex (Annex 1) of the same legislation or in different national guidelines.

Other limitations in the current legislation for the assessment/management of contaminated sites are the lack of:

- “ecological criteria”, since only the assessment of health risks is required;
- Criteria for agricultural use of the sites and of residential use with vegetable garden.

## **TECHNICAL ISSUES RELATED TO THE LEGAL FRAMEWORK**

12. Are there site investigation requirements?

A technical Annex (Annex II to Part IV, Title V of the Legislative Decree 152/06) sets general criteria for detailed site investigations, including:



- Collection of information about polluting activities carried out at the site.
- Construction of preliminary site-conceptual model for the site investigation plan.
- Minimum requirements for the detailed investigation plan:
  - sampling points positioning,
  - definition of the analytical set,
  - sampling strategy for soil, subsoil and groundwater,
  - analytical methods for soil and groundwater analyses.
- Execution of the investigation plan.
- Presentation of results of the detailed site investigation and elaboration of the definitive site-conceptual model.
- Evaluation of the need for further investigation.

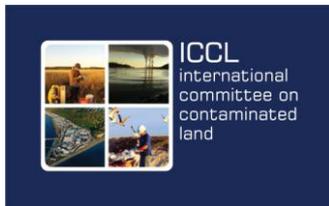
13. Are Risk Assessment & Management the main tools? Yes. See the above definition of contaminated site.

14. Are there specific technical approaches used?

- a. For Human Health (HH), Ecosystems, Groundwater (GW), Surface waters (SW), other targets (i.e. buildings, infrastructures, ...). Please be precise.

A technical Annex (Annex I to Part IV, Title V of the Legislative Decree 152/06) includes the general procedure for conducting human health site specific risk assessment, and sets:

- Acceptable risk levels :
  - Hazard Index:  $HI = 1$  for not carcinogenic substances (for a single substance, or cumulated over more substances),
  - Target Risk:  $TR = 1E-06$  for a single carcinogenic substance,
  - Target Risk:  $TR = 1E-05$  cumulated over more carcinogenic substances.
- Procedure for the selection of chemicals of concern for risk assessment on the basis of:
  - the frequency of exceeding CTCs or background values,
  - toxicity,
  - mobility and persistence in the environmental media,
  - connection with polluting activities carried out at the site.
- Procedure for the identification and parameterization of the source (representative chemical concentrations in soil, sub-soil and groundwater, source geometry definition).
- Exposure pathways to be considered:
  - soil ingestion
  - dermal contact with soil
  - indoor/outdoor inhalation of vapours
  - dusts inhalation
  - soil to groundwater leaching



- Relevant protection targets for human health and groundwater. For the latter, compliance with drinking water standards is required.

b. On a site by site specific approach, or by derivation of guideline values? If possible, please detail your answer.

According to the current definition of contaminated site, when CTCs are exceeded, site-specific human health risk assessment must be implemented for the derivation of RTCs.

c. Do you take into consideration others sources of pollution in the risk assessment? Relevant sources considered in the risk evaluation are potentially contaminated media such as surface soil, subsurface soil and groundwater. Other contribution to human health risk (e.g. primary air emissions, diffuse air pollution, etc.) are not included in the assessment. Risk assessment outputs for some chemicals (such as heavy metals) should always be compared against natural background levels.

15. If the national policy uses guideline values, please be precise in describing the following points:

- a. Reasons for derivation of generic values
- b. Objectives / levels of implementation (investigation, risk assessment, remediation)
- c. Priority substances
- d. Protocols of derivation (including acceptable risk levels used).  
No reference document and procedure for the derivation of the given generic screening values (CTCs) is available. In many cases they seem not to be “risk-based”.

16. What are the drivers for remediation?

a. To what level is clean-up required? (i.e. acceptable risk, land use values, ...). Clean-up targets are RTCs, derived from site-specific human health risk assessment and HI, TR human health protection objectives.

b. Does your national policy use cost-benefits analysis for the choice of the remedial solution?

A technical Annex (Annex III to Part IV, Title V of the Legislative Decree 152/06) sets general criteria for the selection of safety measures, containment measures and remediation techniques according to the BATNEEC (Best Available Techniques Not Entailing Excessive Costs) approach. Criteria for the monitoring of the adopted measures are also provided.

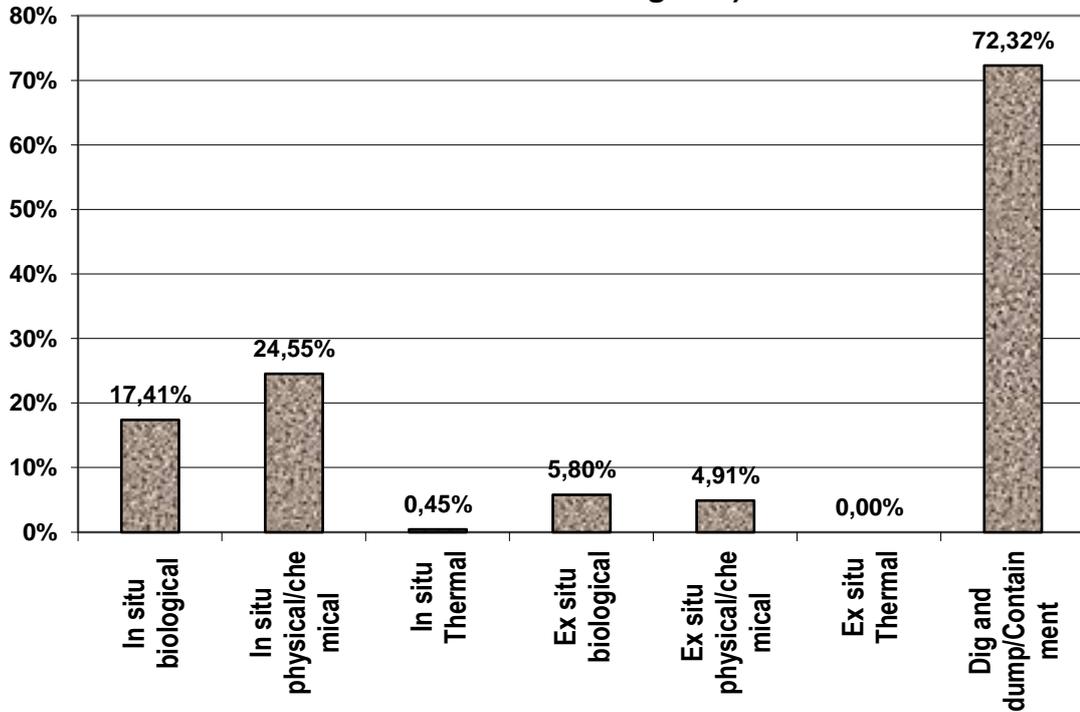
17. What are the main remediation strategies or treatment techniques used in your countries (including Natural Attenuation)?

a. Distribution of techniques? Despite the main principles provided in the legislation, the most applied containment/remediation measures to date are “dig and dump” for soil and “pump and treat” for groundwater. The distribution of the applied techniques (including combination of more

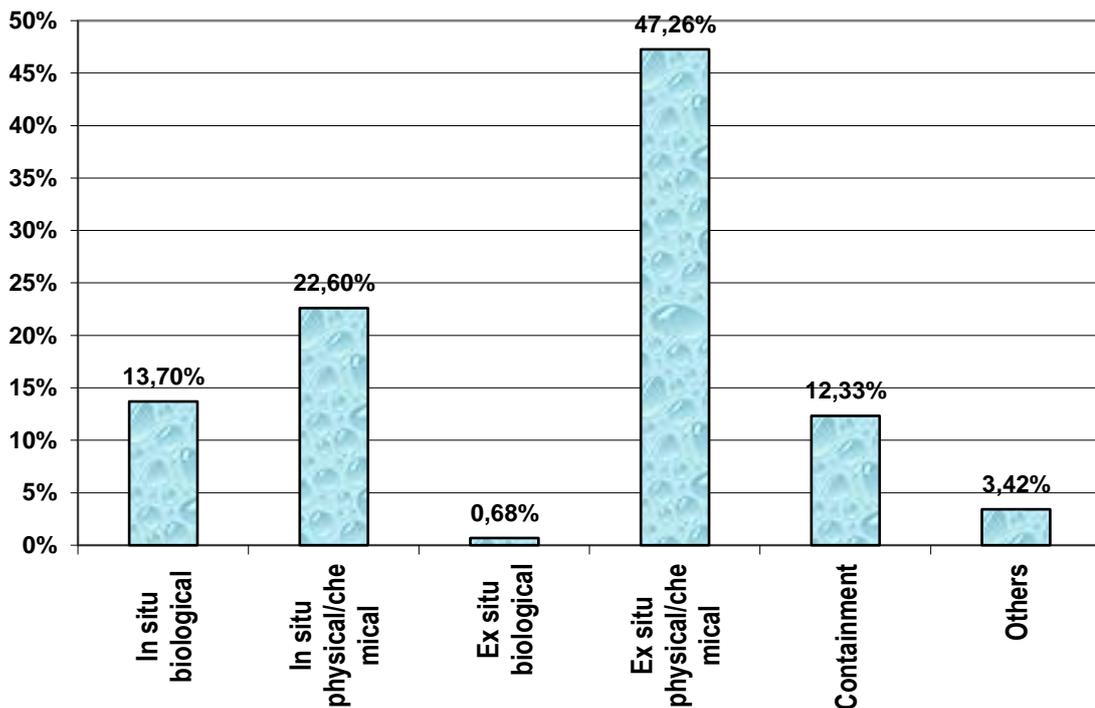


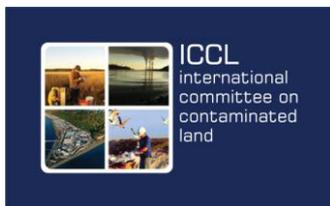
technologies) is reported the following figures (source EIONET CSI 015 “Progress in Management of Contaminated Sites”, 2006).

### Remediation techniques for soil, sediments and sludges (224 sites in 6 regions)



### Remediation techniques for groundwater (146 sites in 6 regions)





b. Evolution in time?

.....  
c. Acceptance of innovative treatment techniques?

18. Are you considering sustainability in the national approach? **No.**

a. If yes, how? In particular, how the three pillars of sustainability are considered and balanced.

b. If no, explain the reasons and the future challenges.

Sustainability principles are embedded in other parts of the Environmental Code but are not really highlighted with respect to the management of contaminated sites.

Two out of three pillars of sustainability are cited in Annex III to the legislation on contaminated sites in the phase of selecting different options for remediation: *"The choice of the a technology should take into account the evaluation of environmental benefit and cost sustainability. The remediation should reach the objective with minimum environmental impact and maximum effectiveness."*

At the moment there is a discrepancy between the legislative context and consolidated practice, mainly because it is not mandatory to account for sustainability in the procedure of selection of a risk-reduction measure.

As a future challenge, a national initiative, called SuRF-Italy, started in 2012 within a Group of Italian public and private stakeholders. SuRF (Sustainable Remediation Forum) has the objectives of promoting sustainability concepts in all phases of the management of contaminated sites, being a collector of good practices and developing frameworks and guidelines in this sector together with other SuRF initiatives worldwide.

19. How does your country bridge the CLM approach with:

a. Land planning programmes?

b. Public health programmes (aggregation of impacts on surrounding populations)

There are not specific provisions for these two issues. The reuse of brownfields avoiding consumption of green areas is an important question that is presently being discussed in Italy.

Regarding public health, a project called "SENTIERI" - Mortality study of residents in Italian polluted sites - has been funded by the Italian Ministry of Health (Strategic Programme Environment and Health). The project focused the assessment on the Sites of National Interest (see above), that in many cases involved large land areas and complex contamination patterns.

## **FINANCIAL ISSUES**

20. What are the specific practices with respect to "Orphan sites"?

The costs of "potentially contaminated sites" investigation and remediation, when the site is identified as "contaminated", are in charge of the polluter (i.e.



the subject responsible for the contamination), in application of the EU “polluter pays principle”. However if the subject responsible of the contamination cannot be identified or cannot pay for site investigation and remediation, the land owner, or another subject interested in the site redevelopment, may carry out these activities.

Public authorities are responsible for identifying the polluter and, in case of non-existing liable subject or non economically sustainable remediation costs, public funds are available at local and national level to carry out investigation and remediation activities taking into account a “priority list”.

However the land owner, after discovering the potential contamination of the site, has the duty to apply the “prevention measures” in order to limit a potential environmental damage. After that the “orphan site” remediation and redevelopment is completed by public authorities, if the land owner is not interested or is not able to refund the relevant costs, the site property is transferred to the public according to a “real burden” mechanism.

Besides the “real burden” mechanism, other instruments available to public authorities for deriving funds for contaminated sites remediation, are the so called “environmental liability procedures”.

21. Do you have an idea of the annual budget allocated to Soil Contamination Management? No official data are available.

- a. How is it divided between public, private and others?
- b. What are the main financial / funding systems in place in your country? (e.g. Financial guarantees, insurance, public – private partnerships, special foundation, industrial consortium, enforcement, ...).

Besides the “real burden” mechanism, other instruments available to public authorities for deriving funds for contaminated sites remediation, are the “environmental liability procedures”.

The mechanisms of Local and National Area Plans are also envisaged by the current legislation for the cleanup of contaminated sites. To these Plans, besides the polluters, also public and private stakeholders, interested in the redevelopment of a specific area, may participate.

- c. Between the different steps of management (investigation, remediation, monitoring...)?

## **ORGANISATIONAL ISSUES**

22. How are stakeholders and in particular communities involved in the approach?

According to current legislation, public participation to the decisional process regarding the management of contaminated sites is guaranteed by the institute of “decisional authorities’ conferences”. At the process, besides all public authorities and private parties involved (e.g. polluter, land owner, etc.), also other stakeholders such as trade unions, citizens associations, environmental associations, etc. may participate.

23. Is there a specific approach for:



- a. Brownfields?
  - b. Megasites? Some of the Sites of National Interest may be considered as megasites and managed at National level by the Ministry for the Environment.
  - c. Widespread pollutions?
  - d. Reuse of excavated soils? (e.g., in relation to their quality)
24. Does your national policy include any accreditation system for consultants or service providers? If yes, please provide some details.  
No. There is only the need for each project to be signed by qualified specialists (e.g. qualified engineers, qualified geologists, qualified chemists, etc.).
25. Do you have any training / capacity building programme, any management accountability and performance measurement? No.
26. How is the necessary inter-governmental coordination for CLM organized? (e.g. with Health Protection Department, with the public site owners, with state or local public sector environmental organizations, with special interest advocacy groups, ) The necessary coordination is implemented by the institute of the “decisional authority’s conferences”.

## **CRUCIAL DEVELOPMENTS IN THE FUTURE**

Are there any additional issues to be further developed in the following months/years whatever they are (Research and Development needs, organisational issues, ...)?

Unofficially or officially, do you see any opportunities for collaboration in the coming months or years that may improve overall coordination among international organizations? (e.g., conferences, workshops, international (technical or policy) initiatives, growing alliances (e.g., in support of redevelopment /reuse of contaminated lands, etc.).

## **REFERENCES**

Please give most important references (documents, website, projects, and case studies) that could be relevant for explaining your national approach