

**Environmental Liability Directive (ELD)
ELD Government Expert Group meeting**

Case studies assessed by ISPRA under ELD National Legislation

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SNPA Guidelines on the assessment of the Env Damage

Evidence that a sufficient likelihood exists that environmental damage will occur in the near future

1. Relevance of the source of damage. The source must be active
2. Presence of pathways of exposure of resources. There must be exposure routes connecting the source to natural resources liable to harm
3. Period of the permanence of the source
4. Frequency of activation of the source
5. Extent and the dangerousness of the factors that characterize the source
6. Proximity of the target with respect to the source
7. Degree of exposure of the target with respect to the source

CASE STUDY 1

Marine-coastal water body imminent threat of damage

Spillage of hydrocarbons to a marine-coastal water body

SPILLAGE OF CONTAMINATION FROM THE STORAGE SITE – Damaging occurrence, Damage factors, Adverse effects

- ✓ **Contamination of several years caused by a coastal deposit of hydrocarbon products, subject to land remediation**
- ✓ **Presence of hydrocarbons (also detected in separate phase) and lead in soil and groundwater outside the site boundaries**
- ✓ **Detection of hydrocarbons in an adjacent ditch, which flows into a marine-coastal water body**

Evidence of spillage of contamination from the storage site

Spillage of hydrocarbons to a marine-coastal water body

SPILLAGE OF CONTAMINATION FROM THE STORAGE SITE – Imminent threat of damage to a marine-coastal water body

- ✓ **Marine-coastal water body** is distant only **280 m downstream** and **hydraulically connected** to groundwaters
- ✓ **The ditch** exposed to contamination represent a **preferential pathway of contaminants** to the marine waters
- ✓ **Contaminants are reference concept** for the chemical status of the marine-coastal water body and **for the marine sediments** (lead)

Chemical status already not good for Lead

Spillage of hydrocarbons to a marine-coastal water body

CONCLUSIONS – Imminent threat of damage to marine-coastal water body

- ✓ **Exposure to pollution diffusion phenomena** (substances present in groundwater and product in a separate phase) outside the industrial site, **able to produce** in absence of preventive measures, **environmental damage**
- ✓ **The classification of the "not good" chemical state could last even longer**, both for the worsening of the ongoing exceedance of the EQS of lead itself, both for possible future exceedances of the EQS of the other parameters found in the groundwater

CASE STUDY 2

Imminent threat of land damage

Dispersion of asbestos fibers on agricultural soil

ABANDONEMENT OF ASBESTOS ON AND IN LAND – Damaging occurrence,
Damage factors, , Adverse effects

- ✓ **Abandonment on the ground of asbestos cement products** (slabs and fragments of corrugated plates) and **burial** of waste from mixed crumbly asbestos cement ashore
- ✓ **Materials are present in the site since two decades** and, after a first safety measure, no remediation has been carried out, therefore the operations carried out lost over time their containment effect
- ✓ A sectorial company submitted a **request for action pursuant to art. 12 of ELD**

Dispersion of asbestos fibers on agricultural soil

ABANDONEMENT OF ASBESTOS ON AND IN LAND – Imminent threat of land damage

- ✓ **No studies for the quantification of asbestos fibres in the site and in the areas surrounding the site**
- ✓ **Operations of securing have been insufficient, over time, to prevent the dispersion of asbestos fibres**
- ✓ **Presence, in the surrounding areas, of agricultural operators, animals grazing and agricultural products potentially affected by indirect exposure to asbestos**

Dispersion of asbestos fibers on agricultural soil

CONCLUSIONS – Imminent threat of land damage

- ✓ **As a result of the state of the big bags**, waste containing asbestos is exposed to leaching by rain and erosion phenomena and wind transport causing a dispersion of the fibres with subsequent redeposition inside or near the site in potentially harmful concentrations
- ✓ **Big bags are placed directly on the ground**, without a physical barrier, there can be a dispersion of asbestos fibres in the soil by leaching of rainwaters
- ✓ **The status of land**, in terms of compliance with thresholds for potential and actual contamination, **must be characterised** to verify whether a threat of environmental damage to soil has resulted in environmental damage
- ✓ **Fibers of asbestos may constitute a danger to farmers**, especially during certain works of land (e.g. ploughing or the cutting and collection of products)
- ✓ **Indirect exposure to asbestos affecting "sensitive receptors"** such as grazing animals and agricultural products grown in the areas surrounding the site

CASE STUDY 3

Imminent threat of land damage

Extinguishing waters impact on a surface water body and land

FIRE ACCIDENT IN AN INDUSTRIAL PLANT - Damaging occurrence, Damage factors, Adverse effects

- ✓ **Fire accident** in an industrial plant
- ✓ **Extinguishing water discharged into an industrial drainage** ("heavily modified" WB) then industrial channel, transitional WB and, finally, into a coastal-marine WB
- ✓ The volume of contaminated water, in particular toluene and xylenes, released into the drainage has caused a **massive death of fish, mainly *Mugil cephalus*** (ubiquitous and unprotected species).
- ✓ The municipality submitted a **request for action pursuant to art. 12 of ELD**

Extinguishing waters impact on a surface water body and land

FIRE ACCIDENT IN AN INDUSTRIAL PLANT - Imminent threat of land damage

- ✓ From monitoring of the industrial drainage emerged **toluene and xylenes in concentrations above baseline conditions and EQS for ecological status** even after about a month from the event
- ✓ **Land is exposed to the dispersion of substances** from the damaged sewage system and the possible dispersion of rainwater leaching the sliding surfaces in which there are residues of benzene, ethylbenzene, toluene and xylene

Extinguishing waters impact on a surface water body and land

CONCLUSIONS – Imminent threat of land damage

- ✓ **An investigative monitoring pursuant to WFD was ordered** to carry out further information on the impact of toluene and xylenes on the surface water body
- ✓ **Soil is exposed to the dispersion of the substances** present in the damaged sewerage and the possible dispersion of rainwater spreading the surfaces wastes in which residues are present
- ✓ **Fire tracers representative the composition of the water** likely to be spread from the sewerage system into the soil are **benzene, ethylbenzene, toluene and xylene, which are substances with a threshold value for potential contamination of land**
- ✓ **Preventive measures for land:** restoring system integrity of sewerage damaged by fire and its testing with water tightness test according to UNI EN 1610, separation of water from uncontaminated areas by public sewage treatment plant, and the emptying of tanks containing contaminated water; the cleaning of draining surfaces with the disposal of plant residues that can no longer be used. Soil sampling and any scarification.

CASE STUDY 4

Imminent threat of groundwater damage

Dispersion of an emerging contaminant into a GWB

BREAKAGE OF A CONTAINER OF EMERGING CONTAMINANT - Damaging occurrence, Damage factors, Adverse effects

- ✓ **Breakage of a container and subsequent spreading of an emerging contaminant potentially hazardous to the environment**
- ✓ **Event notified to the competent authorities with a delay of 80 days**
- ✓ **The source of potential damage not contained in time and reached the GWB**
- ✓ **Increase in the concentration of the emerging contaminant found through the operator's periodic monitoring of groundwater carried out as part of the ongoing remediation process at the site for previous contamination of other substances and the same substance produced by the plant**

Dispersion of an emerging contaminant into a GWB

BREAKAGE OF A CONTAINER OF EMERGING CONTAMINANT — Imminent threat of groundwater damage

- ✓ **There were clear migration routes of the emerging contaminant into soil, groundwater and surface water, the risk for GWB for drinking use and therefore for human health was well known, also in the light of the fact that the same compound appeared to have already passed, ex ante to the event the hydraulic barrier**
- ✓ **Even if the emerging component was not yet to be considered among the parameters mentioned drinking water law (pursuant Directive 98/83/EC), there were summation limits in another Italian Region and the same limits in Annex 1, Part B, to Directive 2020/2184 (not yet transposed).**

Dispersion of an emerging contaminant into a GWB

CONCLUSIONS - Imminent threat of groundwater damage

- ✓ **Operator was fully aware of the effects of the emerging contaminant** on human health and the environment and of the fact that the same was already detected in the GWB beyond the hydraulic barrier and remediation systems already activated
- ✓ **The lack of notification pursuant art. 5 of ELD** about the dispersion of the product did not allow the operator and the competent authorities to ascertain all the possible migration paths
- ✓ **The lack of notification about the nature and extent of the accidental event** allowed the source of contamination to remain in the environment resulting in its dispersion
- ✓ **The containment system for groundwater abstraction and treatment has contributed only partially** to the recovery of the product and it does not seem to guarantee adequate containment and recovery of contamination
- ✓ **The quantity of dispersed product (in mixture) must not be considered negligible**, because its limit of 0,5 µg/l makes it able to contaminate a volume of groundwater of tens of millions of m³

THANKS FOR YOUR ATTENTION!

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