

# The Management of Soil Pollution in Europe (Twentieth-Twenty-first Century)

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## ABSTRACT

The issue of soil pollution due to industrial activities appeared very late, beginning in the 1980s, in the environmental codes of various European countries. The long history of this emergence is related to the invisibility—and the rendering invisible—of this issue, as well as to the major scandals that propelled it into the public debate, along with the more global paces and geographies of deindustrialization and urbanization.



Arsenic, cadmium, mercury, PCBs, and radioactive substances are present in the soil of this former dump site operated by the Ugine Kuhlmann chemical products company between 1943 and 1960 in Jarrie (Isère, France). © Alexandre Elsig, 2018.

Soil polluted by industrial activity is not an inert material. Even when the activity that generated the pollution has disappeared, the contaminated soil continues to affect bodies and ecosystems. This issue has nevertheless

remained a minor concern in management policy for industrial toxicity. In most European countries, appropriate legislation developed only in the late twentieth century, even though the pollution of water, air, and bodies had been the subject of legislation beginning in the nineteenth century.

The bacteria paradigm, the belief in the dilution capacity of environments, and the delayed health effects of chronic soil contamination partly explain these diverging temporalities. Governments did not give consideration to a nevertheless fundamental principle of chemistry, the conservation of mass: the pollutants spread by air and water are ultimately deposited in the soil and sediments. Furthermore, sector-specific improvements in the fight against pollution led to negative collateral effects on soil, as bans on dumping toxic substances in water often shifted the problem to the pedosphere. The toxic metabolism can therefore only be conceived holistically.

While the issue of soil pollution long remained invisible nationally, numerous local conflicts unfolded between polluters and victims of pollution in connection with major land contamination, primarily due to the impact on crops, as demonstrated by the animated confrontations from the turn of the twentieth century near the Andalusian copper mines of Rio Tinto with their sulfur fumes, or in the Calanques near Marseille, which were ruined by lime deposits from the soda industry. Nevertheless, in the vast majority of cases, pollution was obscured by various support mechanisms for industrial development, with the consequent creation of genuine “sacrifice zones” in which the environment and local community were subjected to the priorities of technological modernity and the grandeur of nations.

## **Out of Sight, Out of Mind**

Among polluted soil, it is important to distinguish where the contamination is spatially concentrated from where it is more diffuse. Regulation is much more interested in the former, with decontamination efforts being initiated at past sites for industrial activity and raw material extraction, in addition to abandoned military sites, dumps, and locations of chemical accidents. On the contrary, roadsides polluted by lead and hydrocarbons, grapevines polluted by copper, and fields polluted by various arsenic-based or synthetic pesticides are not included in remediation programs (*réhabilitation* in French, *Sanierung* in German).

From a chronological point of view, the traces left by industrialization in the soil were initially connected to the mining and metallurgy sectors. Known for the extraction of cinnabar, the Almadén site in Spain, which was in full expansion during the sixteenth century, is still contaminated by mercury today. Later, during the nineteenth century, the pollutant load was concentrated on certain sites near cities, which served as outlets for new “ultimate” waste, especially the waste generated by the chemical industry. Finally, throughout the twentieth century, toxic substances constantly diversified with the development of synthetic chemistry, petrochemistry, and physics. Many wartime innovations were adapted to the civilian market, such as DDT. Persistent organic pollutants such as PCBs, chlorinated solvents such as trichloroethylene, and radioisotopes gathered in geological layers, with some seeing this as marking the beginning of the Anthropocene. The management of toxicity is seemingly more oriented toward keeping pollution far away from humans than taking measures to protect ecosystems. Dumping hazardous waste in the high seas is the most striking example of this headlong rush.

## **Spectacular Cases, Discreet Management**

This toxic heritage emerged on the political scene and in the media beginning in the 1980s. To be sure, the regions concerned early on by deindustrialization had already taken measures to clean up abandoned sites, such as Belgian mines in 1967. However, the national policies that explicitly involved soil pollution appeared during the 1980s (Norway in 1981, the Netherlands in 1987, Germany and Switzerland in 1998, Italy in 1999, France and the United Kingdom in 2000, etc.). Toxic dumps were criticized, such as those of Lekkerkerk in the Netherlands, while major industrial disasters (Seveso in 1976, Chernobyl and Schweizerhalle in 1986) revealed the very long-term and large-scale risks of “industrial civilization.” Numerous associations—Greenpeace, Robin des Bois,

Legambiente—and movements by local residents played a decisive role as whistleblowers. However, these spectacular affairs should not overshadow the fact that the management of soil pollution occurred, in the vast majority of cases, discreetly in discussions among regulators, polluters, and engineers.

Numerous blind spots remain in the regulation of contaminated sites: far from all of them have been inventoried; the health risks remain poorly measured, and are dominated by the economic considerations of reconversion, especially in connection with real estate; the principle of remediation does not involve the elimination of risks, but rather their reduction to standards deemed acceptable according to a cost-benefit analysis that leaves room for multiple interpretations; for some particularly polluted territories, a toxic path dependency takes hold, as the soil is subject to restricted use for lack of remediation, and can even be designated as a hazardous substance reprocessing site; polluted soil means polluted subsoil, with the storage of waste in deep geological layers being either actively practiced (as with the former Herfa-Neurode potash mine in Germany, active since 1972) or under study (for waste from the nuclear industry); and finally, while the production of the pollutant load has now been reduced on European soil, it has been outsourced to African and Asian countries, for extractive and productive processes as well as for the export of waste.

Today, legislation and practices relating to polluted soil in the European Union remain fragmented. The latest estimates for the EU-28 have identified 2.8 million polluted parcels. Approximately one quarter of them are included in databases (such as BASOL and BASIAS in France) and are subject to monitoring, with only 10% of them (approximately 65,000 sites) having been decontaminated. The cost for this great cleanup effort will total at least 119 billion euros. However, the polluter pays principle requires that responsibility be attributed for contamination that often dates back multiple decades. History can be challenged by the various actors involved, thereby raising problems for historical practice: in processes involving the law or inventories, history is more often seen as a recorder of past “facts,” with no genuine reflexive dimension. History nevertheless has a role to play—a symbolic one in particular—by revealing the processes that made these contaminations acceptable for so long, and also by creating opportunities for interdisciplinary research with geologists, archeologists, sociologists, and legal experts.

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