Social history of industry, between environmental violence and working-class ecology. A case study on the chemical plant in Spinetta Marengo, Italy

Vittorio Martone[1]

Angelo Castellani

University of Turin, Italy

University of Bologna, Italy

Abstract

The Spinetta Marengo chemical plant, located in the city of Alessandria, Piedmont, is one of the most important industrial facilities still operating in northern Italy. Now almost 120 years old, it is the only perfluorinated compounds (PFAS) factory in Italy and one of Europe's "hotspots", i.e. places where contamination is particularly concentrated and dangerous. Analyzing the social and political effects of pollution, we observe an entrenched weariness surrounding industrial harm, with a very low degree of collective activism. We propose that being hardened to industrial damage is in part the outcome of years of slow environmental violence, which has normalized long-term exposure to toxic substances through repression, negotiations and compromises, inside and outside the factory. Social history reveals the workers' recollections about illness and risk acceptance, repression and occupational blackmail, but also conflict around environmental and health justice. Drawing on political ecology, the concepts of environmental & 'slow' violence, and green criminology, we integrate archival interviews, press reports, and fieldwork. Conflicts in the 1960s and 1970s escalated demands for the right to health, leveraging democratic medicine and "white strikes" to close polluting departments and secure compensation. However, activism then declined, and slow violence manifested in asymmetrical knowledge/power, temporal deferral of corporate responsibilities, the curation of memory, and ecological grief for lost industrial landscapes. Amid occupational blackmail and the residues of modernity, counter-narratives could still break the silence, and valorize the suffering of toxified communities.

Keywords: Spinetta Marengo, toxics, slow violence, environmental justice, right to health

Résumé

L'usine chimique Spinetta Marengo, située dans la ville d'Alessandria, Piémont, est l'une des installations industrielles les plus importantes encore en activité dans le nord de l'Italie. Vieille de près de 120 ans, elle est la seule usine de composés perfluorés (PFAS) en Italie et l'un des « points chauds » d'Europe, c'est-à-dire les lieux où la contamination est particulièrement concentrée et dangereuse. En analysant les effets sociaux et politiques de la pollution, nous observons une lassitude profondément ancrée face aux dommages industriels, avec un très faible degré d'activisme collectif. Nous suggérons que cette insensibilité aux dommages industriels est en partie le résultat d'années de violence environnementale insidieuse, qui a normalisé l'exposition à long

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[1] Associate Professor, Department of Cultures, Politics and Society, University of Turin, Italy. Email: vittorio.martone@unito.it. Angelo Castellani, PhD student, Department of Sociology and Business Law, University of Bologna, Italy. Email: angelo.castellani2@unibo.it. This essay is the result of a joint effort. However, for formal purposes, Martone is the author of sections 1, 2, 3 and 4; Castellani is the author of sections 4, 5, 6 and 7. Both are authors of sections 8 and 9. Acknowledgements: We would like to thank two anonymous reviewers and the editors of the *Journal of Political Ecology*, Simon P. J. Batterbury and Casey Walsh, for their interest in our research and for carefully following the peer review process. We would also thank Lino Balza and the *Movimento di Lotta per la Salute 'Giulio Maccacaro'*, and the ISRAL (*Institute for the History of the Resistance and Contemporary Society in the Province of Alessandria*). We want to dedicate this article to Claudio Lombardi, key figure in local environmentalism, who passed away in October 2025.

terme à des substances toxiques par la répression, les négociations et les compromis, à l'intérieur et à l'extérieur de l'usine. L'histoire sociale révèle les souvenirs des travailleurs concernant les maladies et l'acceptation des risques, la répression et le chantage professionnel, mais aussi les conflits autour de la justice environnementale et sanitaire. En nous appuyant sur l'écologie politique, les concepts de violence environnementale et « lente », et la criminologie verte, nous intégrons des entretiens d'archives, des articles de presse et des travaux de terrain. Les conflits des années 1960 et 1970 ont intensifié les revendications pour le droit à la santé, en s'appuyant sur la médecine démocratique et les « grèves blanches » pour fermer les départements polluants et obtenir des compensations. Cependant, le militantisme a ensuite décliné, et la violence « lente » s'est manifestée par un déséquilibre entre connaissances et pouvoir, un report temporel des responsabilités des entreprises, la conservation de la mémoire et le deuil écologique des paysages industriels perdus. Au milieu du chantage professionnel et des résidus de la modernité, des contre-récits ont tout de même réussi à briser le silence et à valoriser la souffrance des communautés intoxiquées.

Mots-clés: Spinetta Marengo, substances toxiques, violence lente, justice environnementale, droit à la santé

Riassunto

Il polo chimico di Spinetta Marengo, in Alessandria, Piemonte, è uno dei più importanti impianti industriali ancora in attività nel Nord Italia. Con 120 anni di storia, oggi è l'unica sede italiana di produzione di composti perfluorurati (PFAS), ma anche uno degli "hotspots" europei: luoghi in cui la contaminazione da PFAS è particolarmente concentrata e pericolosa. Analizzando gli effetti sociali e politici dell'inquinamento, abbiamo osservato una sostanziale assuefazione al danno industriale, con bassissimi livelli di attivazione collettiva. In questo saggio proponiamo che l'assuefazione ai danni industriali sia in parte il risultato di anni di violenza ambientale graduale, che ha normalizzato l'esposizione a sostanze tossiche attraverso repressione, compromessi e misconoscimenti, dentro e fuori la fabbrica. Con un approccio di storia sociale dell'industria, analizziamo le memorie operaie riguardo alle malattie e alla percezione dei rischi, alla repressione e al ricatto occupazionale, ma anche ai conflitti relativi alla giustizia su ambiente, lavoro e salute. Attingendo all'ecologia politica, al concetto di violenza ambientale e alla green criminology, integriamo analisi d'archivio, articoli di stampa e ricerche sul campo. I conflitti del cosiddetto *lungo '68* hanno intensificato le richieste per il diritto alla salute, sfruttando la medicina democratica e gli "scioperi bianchi" per chiudere i reparti inquinanti e ottenere risarcimento. Tuttavia, l'attivismo è poi diminuito e la violenza ambientale si è manifestata in un asimmetrico rapporto tra conoscenza e potere, nella procrastinazione legale delle responsabilità aziendali, nell'uso politico della memoria e nel dolore ecologico per la perdita di paesaggi industriali. Il nostro studio delle "memorie" ha dunque inteso praticare un'ecologia politica delle relazioni di potere tra industria e territorio partendo da un esercizio di revisione storiografica e di decostruzione della memoria e del paesaggio industriale.

Parole chiave: Spinetta Marengo, tossicità, violenza lenta, ingiustizia ambientale, diritto alla salute

1. Introduction

This article illustrates some results of our research on one of the most important industrial facilities still operating in northern Italy. The Spinetta Marengo chemical plant, located near the city of Alessandria, Piedmont, is a remnant of Fordist industry in a region historically defined as the 'industrial triangle', the focal point of Italy's twentieth-century economic boom. Now 120 years old, this facility has gone through various production specializations, has seen different ownership structures, and has employed five generations of workers. Throughout its history, it has been managed by two of the world's leading chemical multinationals, Montedison and Solvay, included among the 'nine sisters of PFAS' (per- and polyfluoroalkyl substances).[2] The

[2] We refer to the results of *Forever Lobbying*, conducted in Europe by 46 journalists from 30 newspapers in 16 countries. The investigation analyzed 14,331 documents from the 'nine sisters of PFAS' (Ashai Glass, Atofina, Ausimont, Daikin, Clariant, Dupont, 3M, Miteni, and Solvay) and their trade associations (Society of the Plastics Industry Association and Plastics Europe). All sources are available online: https://foreverpollution.eu/lobbying/ (last accessed September 10, 2025). Montedison was the largest chemical company in Italy, established in 1966 by the merger of Montecatini (a chemical company) and Edison (an electric power utility). In the 1970s, Montedison employed almost 150,000 workers in metal factories, power plants, industrial ports and refineries. In 1988 it became Enimont, a joint venture with Eni, the Italian multinational energy company. Solvay Group is the well-known multinational chemical company founded in Brussels 160 years ago. In 2024 employed more than 9,000 workers in 44 production sites, in 41 countries.

Spinetta Marengo site – owned since 2024 by Syensqo, a spin-off of Solvay Group – is the only PFAS factory in Italy and an analysis published in March 2023 identified the area as one of Europe's "hotspots", i.e. places where contamination is particularly concentrated and dangerous (Cordner *et al.,* 2024). PFAS are well-known persistent organic pollutants, whose danger to human and non-human health has now been recognized (DeWitt, 2015; Zahm *et al*. 2024). In 2007, a European program identified Spinetta Marengo as one of the main sources of PFAS pollution in the Po River basin, among the areas most contaminated by these compounds on the continent (McLachlan *et al.,* 2007).[3] Subsequent national investigations have confirmed the problem (CNR & IRSA, 2013). Despite the risks to health and the environment, PFAS are considered strategic for the ecological and energy transition in Europe. This is supported in the report *The future of European competitiveness* (European Commission, 2024), and Syensqo-Solvay itself is at the heart of this strategy: it was the site of the first official visit by the new European Commissioner for Industry in December 2024, in the presence of the Italian Minister for Made in Italy. The purpose of the visit was to celebrate a new fluoro-ionomer, useful for green hydrogen production and integration of renewable energy in electrical grids, whose production is funded by the Italian government. To claim that green and energy transition require such compounds, before their risk is assessed, means locating old and new toxic production in populations and territories that are "sacrificed", thus exacerbating distributive environmental injustice.

Presenting the work of the *PFAS Project*[4], Brown and fellow researchers (2020) defined PFAS compounds as "an unusual chemical class because of their dual nature of contamination: the site-specific contaminated communities, and the ubiquitous low-level contamination of everyday life" (2020, p. 45). In this article, we will focus on site-specific contaminated communities, discussing the Spinetta Marengo chemical facility as a case of slow environmental violence (Nixon, 2011), an enduring manmade disaster that produces and reproduces environmental inequality and injustice in a sacrifice zone within the heart of the rich and healthy Global North. Empirically, we analyze the social and political effects of pollution, based on the demands for environmental justice expressed by social movements and citizen committees. The approach we have adopted involves community-based participatory research, working with contaminated communities to *co-produce* knowledge, build stronger platforms and legislative proposals, request more controls and demand decontamination projects. Regarding per- and polyfluorinated substances, once again Phil Brown and colleagues have recently shown that an alliance between science and activism has favored environmental health activism (Ohayon *et al.,* 2023). In the case of Spinetta Marengo, we have observed an entrenched *weariness* surrounding industrial harm, with a very low degree of collective activism. This is remarkable not only because it concerns a substance universally recognized as dangerous, but also because a similar PFAS contamination, observed in a nearby region of Italy (Veneto), caused a much livelier reaction, with a popular mobilization that led to the closure of a chemical plant and the opening of a criminal case against its former managers (Menegatto *et al.* 2022). The company producing PFAS compounds in Spinetta Marengo has also already been involved in several criminal trials for contamination, but here participation in the mobilization is low.

As we shall see, silence and a certain passive attitude towards industrial pollution are recurrent elements in *contaminated communities*.[5] In our case, we will argue the following thesis: being hardened to industrial damage in Spinetta Marengo is in part the outcome of years of repressions, compromises and negotiations, which have normalized long-term exposure to toxic substances, inside and outside the factory.

The article is divided into nine sections. In the second, we specify our methodology and sources. The third illustrates out theoretical framework, setting the research in a context of political ecology analysis and thus referring to environmental violence and slow violence, as well as the study of environmental justice in contaminated communities. The fourth section reconstructs the history of the Spinetta Marengo chemical plant,

[3] Source: PERFORCE research programme (Perfluorinated Organic Compound in the European Environment), initiated in Europe after the well-known case of perfluorinated contamination at DuPont in Ohio, which triggered the C8 Science Panel, the largest epidemiological study on PFAS (see http://www.c8sciencepanel.org).

[4] PFAS Project Northeastern University, directed by Alissa Cordner and Phil Brown. Brown's 'classic' studies on popular epidemiology (1982) as a form of collaboration between expert and lay knowledge in situations of contested illnesses are highly useful references for our research (Brown 2007).

[5] In this *Journal* see, for example, Jackson (2020).

focusing on moments of conflict over environmental and health issues. In the fifth section, we analyze the workers' memories and perceptions; using archives, we describe the atmosphere and culture in the factory, the working conditions, and the toxification of bodies. The sixth section is dedicated to the repressive instruments used by the factory's management, in the form of private guards, complicit doctors and punitive apparatuses. The seventh completes our analysis by investigating the increasing tension and conflicts that erupted in the late 1960s and early 1970s, including the workers' arguments, the repression of dissent and various successes and failures. The eighth section presents the discussion on empirical findings, before drawing conclusions and analyzing the current situation.

2. Methodology and sources

The empirical material we use falls under the framework of an interdisciplinary research program that began in 2021 at the Department of Cultures, Politics and Society of the University of Turin. This program involves lecturers and students in sociology, anthropology, contemporary history and political geography producing dissertations, teaching workshops, seminars and research activities.[6] We conduct community-based research that in which academic or 'expert' knowledge collaborates with so-called "lay local knowledge", produced at grassroots level by civil society and through activism. Community-based research is particularly useful for addressing ecological controversies where technical and scientific content informs and discursively justifies the development of policies centered on exclusive and technocratic solutions. Power asymmetry is increased between expertise and lay knowledge, emptying and concealing the true nature of struggles for environmental justice. We conducted interviews and held conversations, as well as public meetings and events. Then, we examined institutional documents and documentary sources. We also made use of material produced by non-governmental organizations and associations with recognized expertise on these issues. We analyzed legal documents and interacted with lawyers and attorneys active in the area. Interviews were crucial for investigating residents' and civic organizations' expectations of justice, as were interviews with medical, epidemiological, hematological, biological, and chemical experts.

Within this broader research program, we gradually recognized the importance of reconstructing political-industrial ecology as a significant factor in the production of environmental violence. In narrating the social history of the factory, we try to frame its political-industrial ecology; the broader historical, political, social, technological and economic mechanisms shaping the relationships between industrial production and its social and ecological implications (Newell & Cousins 2015). Key foci include the chemical plant, the Fordist human environment and urban infrastructure, the chemical production workforce, and the toxicity their bodies are exposed to.

We identified workers' memories as the unit of analysis. Workers' statements were in the Montedison archive directed by ISRAL (the *Institute for the History of the Resistance and Contemporary Society in the Province of Alessandria*), which contains a series of interviews carried out in the 1980s with male and female workers at the chemical facility, along with medical reports, floor plans, factory board records and press reviews. We also analyzed articles from various newspapers such as *Azione Socialista, Il Piccolo* and other local media, including publications distributed inside the factory such as union periodicals and workers' texts (*Il MoNOcolo* and *Unità Operaia*). Giving space to these sources reflects our epistemological and political position that the factory workers' experience should guide research into occupational health (Oddone *et al*., 1977). In addition, our interviews were with residents, activists, experts and journalists, and we participated in public events and hearings in criminal trials.

Other locally produced manuscripts compiled by local historians, school workshops, and civic initiatives were also very important. There was collaboration and constant dialogue with local figures involved in the struggle for the environment, work, and health over decades. We also collaborated with the people who

[6] Now funded by the CRT Foundation (RF 105214 / 2023.0636). Title of the project: *A 25 anni dalla Convenzione di Aarhus. Informazione, consultazione e partecipazione di comunità su ambiente e salute* (2023-2026) (*After 25 years of the Aarhus Convention. Information, consultation and community participation on environment and health*).

originally created the archive[7], a former worker historically active in the health movement within the chemical facility[8], and a former local administrator with a deep knowledge of the history of the chemical plant.[9] This "community of practice" (Robbins 2012, p. 85) brings academic research and knowledge together with the experience and practices of civil society and activism (Martinez-Alier *et al*., 2014).

3. The social history of industrial toxification: Theoretical framework

As we have framed it above, the history of the Spinetta Marengo chemical plant is a case of slow environmental violence, an enduring manufactured disaster. Our theoretical framework merges political ecology with the study of environmental violence and slow violence, environmental justice and contaminated communities.

Environmental violence is understood here as a form of violence intrinsic to the economic rationale supporting the development model of capitalist economies. It is not only direct and overt, but also a more general ecological disorganization produced by the actions of powerful figures – states, corporations and companies – who pursue the imperative of economic growth (Stretesky, Long & Lynch, 2013).

Green criminology goes further to identify not only legal violations as "crimes", but all legal and illegal actions aimed at degrading nature, derived from or connected to dominant production and consumption models (Brisman, 2008; White, 2008). By focusing on the legal aspects of health and environmental conflicts, green criminology helps to identify power asymmetries between those who exercise violence and those who suffer it (Ruggiero, 2015). Economic, political and military asymmetries emerge, but also discursive and technological ones. The powerful can influence the law, and social definitions of acceptable "lawful" risk and harm, even if this is still "awful" risk (Passas, 2005). They can conceal – or deny access to – the tools, data and technologies required to "see" environmental harm, and its victims (Davies, 2019). The legal responsibilities of polluters in technological disasters are challenged.

"Slow" disasters are gradual, incremental and invisible for long periods of time, extending not as a result of a catastrophic or traumatic event, but with silent and exponential contamination (Nixon, 2011). This form of violence is often invisible for many years. Considered to be "spectacle deficient" (*ibid.*, p. 47), "slow" disasters tend to go unnoticed until their effects begin to be felt through loss of biodiversity, pollution and illnesses (Watts, 2001; Zierler, 2011). Some important cases include the 1976 Seveso disaster (Centemeri, 2010), the 1984 Bhopal disaster in India (Fortun, 2001), the 1979 Three Mile Island nuclear tragedy (Trunk & Trunk 1983) and the 2010 Deepwater Horizon oil disaster (Freudenburg & Gramling 2010). Human actions generated pollution and damage to public health and the environment, but with great uncertainty about possible recovery and repair. There was a corrosive effect on contaminated communities, fueling internal conflicts and divisions, where workers and unions appear to be victims but also accomplices of the factory system (Perrow 1984, in Murphy 1994).

There are three elements relevant here to Spinetta Marengo: time, injustice and contaminated communities. Time is a key element in the manifestation of ecological power and inequality, for two reasons. The temporal lag in assigning responsibility – accompanied by the geographical distance from culpable individuals in distant corporate offices – contributes to legal procrastination (Nixon, 2011, p. 51). Communities and governing bodies also postpone the recognition of the severity of environmental pollution. Even when damage is acknowledged, *present* responsibilities for the harm are justified by *past* decisions, compromises and negotiations, just as prospects for repair and remediation are postponed to uncertain *futures*.[10] Understood in

[7] Franco Bove, Daniele Borioli, and Cesare Manganelli, who collected part of their work in the book *Lavoratori in tincea: La Montedison di Spinetta Marengo 1953-1971* (Bove *et al*. 1984).

[8] Lino Balza was an employee of Montedison, a trade union delegate, journalist and animator of several public campaigns on environmental and labor issues, and a key figure in *Medicina Democratica* (an Italian movement born in 1968 concerned with health in the workplace).

[9] Claudio Lombardi was Alessandria's councillor for the environment from 2012 to 2017, and he was a key figure in the protest against the chemical plant. He is the author of the book *Storie di Spinetta Marengo e della sua Fabbrica*, 2023.

[10] Ulrich Beck called this phenomenon 'organised irresponsibility', the situation in which individuals, organisations and institutions shirk responsibility by diluting it in nebulous decision-making chains where it is impossible to determine actions,

this way, slow violence increases environmental injustice, both in its *distributive* and *procedural* senses. The former considers the distribution of environment-related risks and benefits, showing that there is a basic continuity between social and environmental injustice, i.e. among socially vulnerable communities, groups or individuals who are at the same time exposed to health and environmental hazards (Timmons, Pellow & Mohai, 2018). Second, a spatial element of injustice involves "sacrificed zones", hot spots of chemical pollution, extractive industries, toxic waste disposal, and other forms of ecocide (Lerner, 2010). *Procedural* injustice concerns exclusion from decision-making processes. As mentioned above, what constitutes environmental "crime" is controversial and ambiguous, and depends on access to knowledge and data, as well as the tools and criteria for defining damage and its causes, including environmental and health-related consequences. Procedural justice thus requires democratic and equitable participation (especially by involving disadvantaged groups) in decision-making and processes that affect the distribution of environmental risks and benefits. Therefore, it concerns the mechanisms through which distributive justice is created and maintained (Davies & Mah, 2020). Scientific expertise plays a crucial role here: in addition to concealing evidence, experts reinforce narratives, including those concerning the creation of new jobs for the working class, despite their environmental impact. The narrative of violence (Barca 2014) involves those in power creating hegemonic ideas of development, and justifying the protection of discrimination between places and social groups (Armiero, 2020) through normative and supposedly unquestionable goals, including economic growth and material well-being.

Thirdly, slow violence involves contaminated *communities,* "discovering" contamination inside and outside the factory (Edelstein 2018). Bearing in mind that slow violence is discovered above all in post-industrial situations (Mah, 2012), it follows that its effects are profoundly unequal across sacrificed areas. In these contexts, *working class ecology* (Barca & Leonardi, 2018) investigates the system of relations between a working-class community and its environment, strongly marked by the presence of industry. Local low-income and impoverished populations face a choice between working and only if they have the resources, seeking a healthier environment elsewhere (Barca, 2019; Pignarre & Stengers, 2011). Coercion to work is amplified by *noxious deindustrialization*, where toxic production is still active but proceeds under the constant threat of decommissioning (Feltrin, Mah & Brown 2022). This process can have a corrosive effect on contaminated communities, widening the distance – and sometimes the conflict – between those *inside* and *outside* the factory. As discussed by Dunlap & Sovacool (2025), political ecology has tended to focus on conflict outside, neglecting what happens inside industrial plants. We join the political ecology of industrial production, *politicizing* factory conflicts through making visible the hidden ecological entanglements of industrial ecologies (Huber 2017), inside and outside the factory.

We believe it is useful to reconstruct the memories of explicit past conflict. Hence analysis of social history and the workers' recollections of earlier conflict, as in other studies (Pellizzoni *et al*., 2022) that reconceive historical working-class environmentalism (Barca, 2012; Feltrin & Sacchetto, 2023) and climate justice movements (Imperatore & Leonardi, 2023; Rosignoli, 2020). Even in Spinetta Marengo, as we shall see, there were many opportunities for convergence between demands for the right to health in the factory and mobilizations in the surrounding area. But future layoffs were threatened, and mobilization gave way to the acceptance of pollution with access to secure and well-paid jobs. The discovery of contamination has been an *ecological loss*, with the destruction of species, environments, and ecosystems, and also the loss of knowledge related to these environments (local memories and customs developed and handed down over time) (Elliott, 2018). *Ecological grief* results from the discovery of contaminated bodies, illness or the loss of family members (Cunsolo *et al.,* 2018), coinciding with loss of an "industrial landscape", a symbol of well-being and technological promise, but also of economic, political, ecological and moral order. The discovery of contamination undermines the promise of progress that had convinced entire generations to adhere to the productivist pact and that, once abandoned, produced sites whose controversial memory takes the form of negative industrial archaeology (Storm 2014). This is why we think it is important to study environmental violence within the broader social history of industry and the local areas in which it is located.

omissions or negligence (Beck 1992). The concept has been used to examine disasters (Straub, 2021) and white-collar crime (Berghoff, 2018).

4. A brief history of Spinetta Marengo, Piedmont: The chemical hub, the territory, the community

The initial embryo of the Spinetta Marengo chemical plant (Map 1) dates back to 1905. The social history of the factory is not without times of protest, although these periods of conflict have only rarely interrupted the domination of industrial interests, based on repression, compromise and negotiation. In this sense, Spinetta Marengo reflects the economic history of the entire region, i.e. the "industrial triangle" between three cities in North Italy (Milan, Genoa and Turin). It registered an economic and demographic boom in the 1950s and 1970s, mainly driven by automotive and mechanical manufacturing sector, and chemical industries.[11] Post-Fordist transformations and general deindustrialization then generated a serious socioeconomic crisis from the late 1970s onwards, making the fate of the local economy increasingly dependent on the chemical facility and defining the local area as a mono-industrial region.

The history of Spinetta Marengo must therefore be seen within this broader social and industrial history of the region in which it is located. There are four phases to its chemical plant and facilities, summarized in Table 1.

Map 1: Spinetta Marengo. Source: Wikipedia.

When the initial nucleus of the plant opened in 1905, Spinetta Marengo's economy was decidedly agricultural, although there was some manufacturing, silk production and weaving, cereal product processing, the cotton industry and leather tanning (Livraghi & Subbrero, 2013). The chemical industry arrived with the "Società di Marengo", founded by a group of entrepreneurs from Alessandria, who acquired a facility used for extracting gold particles from soil, which had special furnaces for processing chemicals such as copper sulphate and Super (superphosphate, a fertilizer), from a French company (Castellani & Colla, 2006). Shortly afterwards, a plant was built for the production of sulfuric acid, muriatic acid and nitric acid, important for processing copper sulphate. In 1910, the site turned into a real factory: the number of workers increased from 20 to 80, depending on the various production periods. After the First World War, the "Società di Marengo" grew even more, opening new plants and adding new types of processing, and in 1928 it acquired the company "Sclopis"

[11] The population of Alexandria rose from 82,157 in 1951 to 102,446 in 1971 (+19.8%). Today, the population has fallen again to 90,825 (-11.3%).

in Turin, which also concentrated on producing acids and various chemical products. The two facilities were connected by a railway line, which was built on expressly purchased land.

Period	Ownership	Main production	Workers	Conflicts
1905-1933	Marengo Society	Copper sulphate, Super, sulfuric acid, muriatic acid and nitric acid	20 to 60-80 on average	1926-27 – Complaints of air pollution and damage to plant life
1934-1966	Montecatini	Lead arsenates, fluosilicates, muriatic acid, concentrated acid, Algoflon, titanium, Sillan, DDT, glass wool and bichromates	From 800 to 1,100	1941 – Complaints of water pollution and damage to human health, animals and plants. 1961.
1966-2002	Montedison (Montefluos)	Algoflon, Titanium, Sillan, chlorinated and fluorinated, oxygenates, polymer and insulation additives	From 1,550 in 1971 to 1,293 in 1981	1968 – 1972 Workers' health struggles
since 2002	Solvay (Syensqo)	Fluorotensioactives - Hyflon and Algoflon fluoropolymers, PTFE (until 2023), Monomers, Fluoroionomers, Fluoroelastomers	600	2009 and later

Table 1: Phases in the development of the Spinetta Marengo chemical plant.

It was during this phase of growth that the first controversial event in the history of the chemical plant occurred. An environmental pollution lawsuit for was filed by the Spinetta Farmers' Association. The "discovery" of the impact of chemical processing had gone unnoticed for twenty years (Livraghi & Subbrero, 2013). There were similarities with more recent lawsuits. Health and environmental concerns were taken to the courts, with disputes between experts and ultimately a victory for the business. The Farmers Association sued the company, maintaining that the gaseous emissions from the chemical plant were particularly harmful and damaging to people, livestock and vegetation. A report prepared by a professor from the Agrarian Institute in Florence showed that in the immediate vicinity of the industrial area, vegetation was burned by sulfur emissions. The Società di Marengo defended itself with an equal number of reports drafted by experts, claiming that the damage to the crops was mainly due to parasitic diseases, dry soil and lack of husbandry. In February 1926, the Court of Alessandria requested a legal expert report proving that the gases emitted from the chimneys of the chemical plant actually disrupted metabolic functions. However, the experts' final conclusions were limited: harmful emissions were at a low concentration, affecting crops close to the factories, but the extent of the damage did not appear to be high and did not correspond to the amount reported by the owners. Furthermore, they stated that the facilities were in compliance with science and industry standards known at the time.

In 1933, Marengo was acquired by the better-known company Montecatini, founded in 1888 to process copper in the Montecatini area of Val di Cecina, Tuscany. With the support of the Fascist Regime, Montecatini arrived in 1934 with a new plan to produce "colors" (lead arsenates, fluosilicates: sodium, barium, zinc, magnesium) and muriatic acid and concentrated acids. After 1950, there were new projects: production of iron pigments, titanium pigments, glass wool and fluorine derivatives. In this phase, Montecatini obtained local approval, thanks to its construction of infrastructure and social housing, along with welfare policies for workers and their families (Castellani & Colla, 2006). In particular, a close relationship developed between the factory and one suburb; the number of employees reached 600, mostly coming from neighboring municipalities.

Managers and workers were aligned with the main political parties of the time, the Christian Democrats and the Communist Party respectively (Bruno & Rossa, 1974). In 1960, a new concentrated acid plant became operational and all the old sulfuric plants were demolished, with new research facilities. Then new departments (Pigments, Algoflon, Titanium, Sillan or glass wool, etc.) were expanded and the older ones (Camphor, Arsenates, Copper Sulphate, etc.) reduced.

A definitive shift took place from the production of agricultural to industrial chemicals (Castellani & Colla, 2006). Conflict within the plant over health and environmental issues remained low. Despite numerous accidents and illnesses occurring before and during the 1950s, only one complaint is recorded. In 1941, a landowner reported that the waters on his estate were 'unfit for humans and animals', causing the death of trees and horses, as well as burns to the hands. Investigations revealed widespread pollution due to chromium infiltration into the aquifer, both inside and outside Montecatini.[12] There is no record of convictions or remediation, and, on the contrary, production continued undisturbed with departments that would prove to be very harmful to workers and residents of the area, such as Bichromates, Colored pigments, Titanium Dioxide, and Sillan. Union demands were small and the local press largely silent. These years have been defined as "years of silence", with little reporting of poor working conditions and exploitation, or health hazards (Bove *et al.* 1984).

In 1966, Montecatini merged with Edison, a power generation company, to become Montedison, which in 1981 became an industrial holding company. Montedison was competing with large multinationals by this time, and sought efficiencies. As part of the structural rationalization, Montefluos was established in the 1980s to produce fluorinated and oxygenated products for industry.

The workforce had started to change from the early 1960s. While previously workers were mainly local, with technological developments highly qualified professional outsiders were brought in as more advanced technologies entered the production process. Although it would take much longer for significant changes to occur in trade union organizing, there was increased worker awareness of issues that reached their peak between 1968 and 1972. There were protests over working conditions and health concerns inside the factory in these years, which spread to surrounding suburbs. These protests flanked demands for higher wages with calls for the management of safety concerns (granting sick pay, making use of masks, filters and gloves, etc.). Thanks to this pressure, an agreement was signed with the company that gave workers the right to use the Pavia Labor Clinic as often as necessary. Immediately, the factory trade unions called for a series of surveys to determine, department by department, the levels of pollution. When the initial results arrived (with chromium, lead and nitrous vapors up to three times higher than the maximum levels allowed by law), a very strong worker response emerged, especially in the "Colors" department, who began a struggle known in the history of the workers' movement as the "white strike."

Much later in 2002, the Montedison/Montefluos plant – which in the meantime had become Ausimont – was acquired by the Solvay Group, a well-known multinational chemical company based in Brussels. The company first went by the name Solvay Solexis (an acronym for Solvay Excellence in Science), then as of 2011 became Solvay Specialty Polymers and in 2024, Syensqo. Initially, Solvay produced fluoropolymers, which were discontinued in 2023 with a switch to other products such as monomers, fluoroionomers, fluids and fluoroelastomers. The number of employees dropped drastically to 600, and those who remained had a very different professional profile than in the past (mainly highly qualified workers, with 120 university graduates and 450 with technical diplomas).

There have been different controversies in the Solvay period. In 2012, tests of the water under a Solvay plant showed extensive contamination due to hexavalent chromium. The Alessandria Public Prosecutor's Office launched an investigation that identified toxic spills affecting over 1,150 cubic meters of soil within a three-kilometer radius of the chemical plant. A criminal trial began in 2013 and ended with the conviction of Ausimont and Solvay managers in 2019 for environmental failures, obliging them to clean up the area. In the meantime, since 2018, the plant remained the only Italian producer of PFAS, and in 2019 it applied for and obtained authorization to increase production, and some were still produced in 2024, when a temporary order

[12] Reported in Court of Alessandria, *Ausimont-Solvay trial*, hearing of 29/01/2014, p. 136.

halted production following detection of PFAS cC6O4 and PFOAs in soil and water (Guarda, 2024).[13] After the charges pressed by environmental associations, and after civic mobilizations, assemblies and demonstrations, the Alessandria Public Prosecutor's Office started another trial of two Solvay managers, disputing the "leakage" of PFAS polluting Spinetta Marengo and adjacent areas.[14]

5. Plant and worker illness: Poor and coughing bodies, risk acceptance

Throughout the century-long history of the Spinetta Marengo chemical plant, workers have often had to cope with an unhealthy and noxious environment, forced to live with dust, fumes, gas leaks, debilitating heat and constant dangers. Let's start by looking at the workers' memories, preserved in interviews from the Montedison historical archive. Bertolo, a worker at Montecatini in Spinetta Marengo from 1964 to 1979, recalls that:

> This factory has always been the kind of factory... I don't know, I think we can say without fear of exaggerating, a factory of death, in the sense that the older products, especially those concerning colored pigments, [...], always came from factories where there was a danger of being in contact with carcinogenic substances and, therefore, the possibility of not reaching retirement [...].[15]

This perception appears constantly and with complete worker awareness in the interviews found in the Montedison archive. The working conditions inscribed in the workers' collective memory offer images of death and noxiousness: "…there was not one of us who did not have a hole right through his nose, his brain would be emptied"[16]; "rays of sunshine came in through the roof, like in Dante's Inferno, and this orange dust saturated the air [...] Every shovelful raised it... everyone had a hole in their septum, even the maintenance workers…"[17] The reference to the "holes" in the nose relates to a specific production department, the Bichromates[18], which when processed caused the cartilage between the two nostrils to break. The harmfulness of this product was due to the constant presence of dust from moving the raw material, chromite, by hand, and to breathing the chromium fumes that escaped from the ovens in which it was fired. Again, in the same department:

> I remember when I went to work at the Bichromates. The Bichromates was a job that, I don't know if you're better off being sentenced to life imprisonment or at the Bichromates. First of all, the workers there couldn't see each other, you have to remember that the ovens ran on coal, inside the department it was always gloomy, dirty, and the coal that was used to feed the ovens was ground inside there, lime and soda ash and chromite was ground. (Inside the Bichromates department,) 100% of those who worked there died; very few of these people retired, there is a long list of people who died under the age of fifty, Taverna, Tassisto, all of lung cancer.[19]

This association between the Bichromates department and occupational disease appears in many other interviews. Ombretta Borgoglio, who initially worked as a shorthand typist and later became an administrative

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[13] cC6O4 was created by Solvay from 2013 to obtain a better toxicological profile than PFOA. Source: Parliamentary Commission for the Waste Cycle, *Hearing of representatives from Solvay's Spinetta Marengo plant*, January 2020, p. 20. The Commission is a bicameral body that conducts inquiries into illegal activities related to waste management.

[14] Parliamentary Commission for the waste cycle, *Final report on the work carried out in the 18th Legislature*, September 2022, p. 135.

[15] Montedison Archive, Box 1, Folder 4, Interview with Bertolo, p. 10.

[16] Montedison Archive, Box 4, Folder 23, Interview with Mogni, p. 5.

[17] Montedison Archive, Box 5, Folder 27, Interview with Giomi and Scaiola, p. 16.

[18] Bichromates are salts derived from chromic acid. Due to their hexavalent chromium content, they are toxic, mutagenic and carcinogenic environmental pollutants.

[19] Montedison Archive, Box 5, Folder 27, Interview with Giomi and Scaiola, p. 2.

accountant at Montedison, said that: " [Dad died] of an occupational disease, which was cancer, the Bichromates disease."[20] Spinolo, who joined Montedison in 1967, and at the time of the interview was secretary of the PCI cell and a member of the provincial CGIL executive, stated that: "my father worked in that famous Bichromates plant, the factory of death. My uncle also worked in the Bichromates plant, and both died at the age of sixty from lung cancer"; "99 per cent had large holes in their noses, you were told that these people didn't make it to sixty, and they didn't. They all died."[21]

Those who worked in these departments "believed it was inevitable that these risks had to be taken; they believed there was no other way to produce these substances."[22] The workers understood the risks they were taking for their own health, but they were not in a position to say "no, I'm not doing this job and I'm not going there. Where else could you go?"[23] All the same, "it's not that we didn't understand, we understood and you know, bichromates, chromium is a terrible thing."[24]

This disproportion in power relations can also be seen in another aspect, important in understanding the workers' relation with noxiousness and risk acceptance: their relationship with medical experts. Until the social movements of the late 1960s, the only medical advice available to the workers in the chemical plant was given by doctors employed by the company. These doctors, paid directly by Montecatini, played a key role in challenging the workers' experiences. When the workers tried to insist on their symptoms and their experience of them, the doctors intervened to silence them. For example, with regard to the illnesses caused by working in the Bichromates department, "…the factory doctor said to drink half a liter of milk at the end of each shift."[25] The purpose of these remedies was not to help the workers, but to assert their own medical qualification and expert knowledge, in order to disqualify the direct experience of the workers. Contempt towards doctors emerges in various statements, including the one made by Broccolo, a worker who was very active in the trade union. According to him, the plant's doctors were told by its workers about their illnesses and pains, which however:

> …were never included in any list. None of us ever went to see these doctors and grab by the neck, because they were all corrupt within a radius of 100 kilometers, including the doctors employed by the public health system. [...] This doctor had been persuaded into saying that you had a gastric ulcer and that "you can catch the disease you have even if you are a pastry cook", or even by just going to the barber, or, I don't know, by going out to have fun.[26]

The fact that these medical examinations took place but were completely unreliable indicates the importance attached to expert knowledge. The workers recognized medical knowledge as valid, but playing a certain role. Even if some were aware that "medical exams [...] are a joke"[27], the latter still had a strong epistemic value, as mentioned above, as well as a practical purpose. Their practical value derived from the way they allowed the company to show itself to be compliant with controls, and interested in the health of its workers: "They make an effort to pretend to comply with the law. On our health records, they write: everything is fine, and if anything happens, they say: well, we did the exams, and everything was fine. Hundreds have died of these illnesses, and at the exams they always said: everything was fine."[28] Again, on the misleading role played by medical reports:

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[20] Montedison Archive, Box 1, Folder 6, Interview with Borgoglio, p. 17.
[21] Montedison Archive, Box 5, Folder 28, Interview with Spinolo, p. 2.
[22] Interview with Claudio Lombardi, engineer and former local administrator, Spinetta Marengo, 3/5/2023.
[23] Montedison Archive, Box 3, Folder 20, Interview with Leidi, p. 9.
[24] *Ibid*.
[25] Interview with Claudio Lombardi, Spinetta Marengo, 3/5/23.
[26] Montedison Archive, Box 1, Folder 7, Interview with Broccolo, p. 8.
[27] Montedison Archive, Box 5, Folder 29, Interview with Taddei, p. 8.
[28] *ibid*.

> …that doctor who had 2 or 3 workers from Montecatini among his patients, you can rest assured that he was approached by the management of the Montecatini Company and regularly took his bribes… Why? [...] I myself and others were among the people who said: "how can this be? That man has a tumor caused by gas fumes, by breathing dust every day, for days on end. He died for that reason, so why do they now want to make us believe that he died of appendicitis or peritonitis?"[29]

The management *knew* that its production processes were harmful, the workers *knew* that they were harmful, the doctors *knew* that they were harmful. But the combination of the economic power of the factory and the epistemological power of the doctors, at the service of management, was enough to belittle and invalidate the workers' experience. This denial of their experience rests on the consideration that their bodies are poor, expendable bodies, which can be sacrificed and are worth less, and whose illnesses are simply the – very low – price to pay for chemical production.

6. Repression: Demotions, dismissals, redundancies

In the early 1960s, as part of the negotiations on environment and health issues, management brought a complex array of control devices into play. One initial level saw parish priests and local police marshals play a key role in recruiting, instead of the national Employment Offices, thus creating a political-clientelist filter for future workers (Bove *et al.* 1984). A 1962 issue of *Azione Socialista* included a small paragraph entitled "The certificate of good conduct", in which the author noted, not without a dose of sarcasm, that:

> …one of the conditions, quite often indispensable, for anyone wishing to find a job, today as in the past, is that they must enjoy the esteem and approval of the parish priest, which is seen as a personal but also social merit. Qualifications such as education or various proofs of one's intellectual and professional capabilities take second place, compared to that essential document, the certificate of good conduct issued by the parish priest.[30]

These mechanisms were intended as filters during recruitment, trying to limit the increasing politicization of Montecatini's workers. Gallarate, an employee in the Sillan department, recalls that being recognized as a politicized leftist meant losing any hope of being hired. This information was relayed by the "so-called head of the cops, who was usually an officer or a non-commissioned officer on leave, who obtained the information through the police themselves, or neighbors, or the head of personnel who manipulated his most trusted employees. So, he used all means necessary."[31] This feeling of control by the managers comes up in various statements, especially in those of politically active figures inside and outside the factory. Taddei, a Montedison worker who at the time of the interview had already been at the plant for twenty years, and was a firm communist, also described a similar experience. In his words, "for someone who was from the PCI or someone who had been in the CGIL, in the factory there was a lot to escape! If someone had enough nerve to keep it hidden, they managed to survive, but for someone like me, since I've never had any qualms about speaking my mind, it had consequences; I had to do the worst jobs. If anyone rebelled, they would be sent to the *Piazzale.*"[32]

This mention of the *piazzale* (the "yard") gives us the chance to talk about another of the most common repressive methods used at Montedison in Spinetta. Being sent to the "*piazzale*" meant being assigned to do the "humblest jobs in the factory, such as ripping out the grass behind the road, cleaning the toilets, all of those kinds of things."[33] The intent of the "*piazzale*" was to isolate the most problematic workers, frustrating and

[29] Montedison Archive, Box 1, Folder 7, Interview with Broccolo, p. 16.
[30] *Socialist Action*, 2/9/62, p. 1, The Certificate of Good Conduct.
[31] Montedison Archive, Box 3, Folder 17, Gallarate testimony, p. 4.
[32] Montedison Archive, Box 5, Folder 29, Interview with Taddei, p. 2.
[33] *Ibid.*

humiliating them with completely useless jobs. Spinolo also speaks of the "*piazzale*", claiming that "activists were victims of terrible repressions [...], people who were sent to the *piazzale*, good workers, technicians in the sense that they knew how to do their job, were, in the Forties and the Fifties, sent to the *piazzale* to tear up the grass; as many humiliations as it took, until they were forced to quit."[34]

The *piazzale* didn't only have a punitive function. It also brought together all those workers whose health conditions were no longer adequate for them to work in certain departments. In a statement that once again allows us to verify how aware the workers were of the harmful conditions of production, Canepa, a long-standing worker in the factory, insisted that we must not

> …forget [...that] Montecatini, now Montedison, produced a large amount of disabled people, and this must always be taken into consideration. So, a considerable number of very good workers came in and after a certain period of time, as was customary, or even obligatory, did their periodic medical examination and were rejected because they were no longer suitable for certain jobs. At this point, they were sent to the department known as the "*piazzale*", which was the department for all the odd jobs, like cleaning, loading and unloading."[35]

Another case that shows the frequent use of these repressive instruments involved Del Rio: Scaiola mentions that he was sent to "remove water from a well connected to another well, so he would remove the water and throw it into the other well. He would do this job for days and say: 'excuse me I keep removing the water and the water comes back because they are connected.' 'That's not your concern, you have to do this job and you will do it.' He was humiliated, they forced workers like him to quit."[36]

In addition to the danger of being fired or being picked on for political reasons, the threat of losing one's job due to accidents also hovered over the workers at the Spinetta plant. The story told by Canepa is illuminating: Canepa suffered a serious accident in September 1942, when he was hit by a jet of sulfuric acid at the age of just sixteen. The engineer in charge of maintenance tried to fire him, justifying his decision as follows: "I don't know what to say to you. You have caused me a lot of trouble, because I was called in by the magistrate, so at this point I have to see about getting rid of you, because you have been an obstacle and you still are."[37] Canepa was only able to avoid being fired by appealing to the goodwill of the director, "who, in a certain way, was able from time to time to remember that he had a heart."[38] Once again Canepa, at the conclusion of the first interview he gave, insisted with the interviewers about the "utmost importance"[39] that dismissals due to accidents had before the protests seen in the 1970s. The threat of potentially being fired due to injuries contributes to portraying a working class that was still weak, unable to obtain its demands and at the mercy of management. One situation in which this weakness clearly emerged was the massive wave of redundancies in 1953. Just before the Christmas holidays, management announced to the Internal Commission its decision to dismiss 130 workers, deemed "no longer suitable, due to their health conditions, for all the activities and services required by the factory."[40] In the end, the redundancies, while scaled back, were carried out, proving the difficulties workers had in bargaining during the 1950s.

7. Periods of conflict: negotiations, disputes, power asymmetries and negotiation on the environment and health

The 1960s at Montecatini in Spinetta began with a striking case in the workplace, the death of Giampiero Massa. In the historical evolution of bargaining, this event created a small, initial crack in a solidified and

[34] Montedison Archive, Box 5, Folder 28, Interview with Spinolo, p. 5.
[35] Montedison Archive, Box 2, Folder 8, Interview with Canepa part 1, p. 11.
[36] Montedison Archive, Box 5, Folder 27, Interview with Giomi and Scaiola, p. 15.
[37] Montedison Archive, Box 2, Folder 8, Interview with Canepa part 1, p. 2.
[38] *Ibid*.
[39] *Ibid.* p. 16.
[40] *All sides against the dismissal of 130 workers*, in 'Il Progresso', 1/1/54.

accepted structure in which workers could easily be sacrificed and were simply considered expendable. In 1961, Algoflon production began.[41] Massa was a laboratory worker, and was working a night shift when a leak from the sewerage system slowly released the gas, causing Massa to gradually inhale it without realizing. In the morning Maestri, another worker, went to take his place. Algoflon is odorless and colorless, but not in such large quantities: Maestri noticed that the room was full of gas and informed his superiors, who identified the leak. However, it was too late for Massa: after being hospitalized in a coma, he died on 22 January 1962 at the age of 19 years old. His case soon had a strong effect on the workers' consciousness, not least because of the specific nature of his death. Death from Algoflon was different from the previous work-related deaths, which were mainly due to mechanical accidents, and occupational diseases, which mostly involved tumors with a longer onset time. Death from Algoflon is instead the death of "modern chemistry; it reminds one of Seveso much more than of the case histories of accidents occurring in the Forties and Fifties, which were similar to those typical of the metalworking and construction sectors: falls, burns, etc." (Bove *et al.* 1984, 14). The importance of the Massa case "lies not only in the political-symbolic value of the charges, but in the acceleration given to the formation of workers' consciousness" (*ibid*, p. 6). Massa's death put an end to the marginal role of health concerns in the factory during the so-called "years of silence", i.e. the decade between 1951 and 1961. This triggered the process that, in an often indiscernible and non-linear way, would lead to an explosion of conflict. Two aspects were particularly important in this process: the generational turnover caused by new recruits, and a restructuring of production. Let us examine them in detail.

The facility was going through a period of considerable expansion. The recently opened Titanium plant required a large number of workers for maintenance, driving the company to increase recruitment and making the filters provided by the police and the clergy insufficient. The effect of this wave of recruitment was that a new generation of workers entered the factory, decidedly younger, more politicized overall and unwilling to accept the motto that "in the end, the master is always the master"[42], as repeated by the older generations.

Returning to the Massa case, the uproar caused by the incident had a concrete effect on trade union demands at the plant. In the program presented by the CGIL at the renewal of the Internal Commission[43] in 1962, traditional demands were accompanied by a request to set up an Accident Prevention Committee, with an equal number of workers' representatives participating, and an appeal for an ambulance and a nurse to be added to the night shift (Bove *et al.* 1984). During the same year, the sewerage system was modernized, more efficient masks were distributed, cages with greenfinches to detect gas leaks were installed in all premises, and accident prevention contests with cash prizes were introduced. These measures, which we can now recognize as totally inadequate, did not prevent a high number of work-related deaths. The management defended itself with the reports of its doctors and hid behind stricter accident prevention regulations, to the point that, Canepa recounts, in '66-'67, while accidents continued to happen, "the director, [...] no longer knowing what to do, had the factory blessed."[44] In August 1967, FILCEP-CGIL[45] sent a document to all union members in the province of Alessandria concerning the problem of health in the factory (Bove *et al.* 1984). This document is the last element that we need, with 1968 just around the corner, to understand the events that followed, leading to open conflict between workers and management: the renewal of the National Contracts for chemical workers in 1968.[46]

The fundamentally new element that appeared during this period of conflict was the importance now given to occupational health issues. The national contract for chemical workers, for which an agreement was

[41] Trademark for Polytetrafluoroethylene (PTFE), mainly used to make non-adhesive surfaces capable of withstanding high temperatures.

[42] Montedison Archive, Box 3, Folder 17, Gallarate Interview, p. 7.

[43] The Internal Commission is a democratically elected body representing workers, regardless of their union commitment.

[44] Montedison Archive, Box 2, Folder 8, Interview with Canepa part 4, p. 1. As early as 1962, *Azione socialista* reported the news of a visit by the bishop to the factory, commenting that "[...] workers do not need factories to be blessed, but free factories and better wages." (Source: *Socialist Action,* 1 (1), September 1962, The Bishop's Visit, p. 3).

[45] Italian Federation of Chemical and Petroleum Workers.

[46] The National Collective Labour Agreement (CCNL) is an agreement between workers' associations and employers, which regulates labour relations in a specific sector, ensuring uniformity and standards in the treatment of workers in the same sector.

reached on 12 December 1969, included an article, number 23, entitled "Working Environment." The article states that "work in which the concentration of vapors, dusts, toxic, noxious and dangerous substances exceeds the maximum limits (MAC) established by the tables of the American Conference of Governmental Industrial Hygienists is not allowed", and that "the trade unions operating within the company shall participate in the definition and adoption of prevention and safety measures aimed at eliminating the causes of dangerous, harmful or particularly harsh working conditions" (Bove, *et al*. 1984, 52). This second statement marked a radical change, because it definitively opened the door to the intervention of the University of Pavia Labor Clinic, which had already been mentioned in an agreement reached within the factory in June of the same year. The new contract signed in 1969 provided for "the first surveys carried out inside the factory to monitor environmental situations."[47] However, the approval of the contract did not mark the end of the unrest, but rather the beginning: it was not applied without resistance from the management, which made it necessary to continue "fighting for the contract itself to be applied."[48]

The workers themselves managed the relationship with the factory; they are the ones who collected the data and took the samples, and above all they are the ones who collected the results of the analyses and had them explained directly by the doctors. The absence of mediation produced by this direct relationship between doctors and workers was a crucial step in giving credit to their direct experience and recognizing the value of what they had lived through. After decades of dealing with corrupt doctors who served the factory, it is easy to understand the radical nature of such a change. As Montedison employee Vazzana stated, the workers went "to Pavia in delegations, directly to see the Director or the Vice Director, to have them explain the meaning of this data, these numbers, what they meant in terms of health and the aggression suffered by the human organism in such an environment."[49] Their demands were aimed at bringing the level of harmfulness in the various departments back within the parameters deemed acceptable by the Clinic, and otherwise to close those departments. The doctors at the Clinic began "to make findings and send out reports [...]; it was recognized that an occupational disease actually existed, that all these people died of cancer. The Institute of the University of Pavia, the Labour Clinic, had no choice but to indicate it as the cause."[50] The Clinic was fundamental in legitimizing the workers' experience, thanks to its status as a source of expert knowledge. All the accounts of harmfulness used in putting together this work suddenly become more valid in the eyes of management and the public sphere, as soon as they received the endorsement of an institute linked to the University. Whereas medical expertise had previously been used to ensure that all of the workers' experience of harmfulness remained invisible, it was now fundamental to its visibility, credibility and significance.

The great participatory enthusiasm that emerged in these health and environmental struggles of the early 1970s slowly faded, leaving management time to regain control, and it seems that it was no longer possible to maintain a high degree of protest. Based on the interpretations of the interviewees, we can explain this through three interpretations: the loss of trade union strength; increased wages and compensation; and the deteriorating relations between workers and the local area.

Balza, a former Montedison employee and a recognized activist, argues that the national framework was instrumental in impoverishing the unions, both morally and contractually. His interpretation is that the defeat suffered by the Fiat workers[51] during their 1980 protests in Italy had repercussions for the entire workers' movement, including in the province of Alessandria. The autumn of 1980 marked the end of the "twelve years that saw the most bitter and long-lasting social conflict in the history of industrial Italy", more specifically with the "trade union defeat in the long tug-of-war, which lasted thirty-five days, triggered by Fiat's request to make 14,000 redundancies and drastically reduce its workforce" (Musso, 2002, p. 244). Supporting Balza's hypothesis, former Montedison worker Vazzana stated that the "category of chemical workers was one of the lowest paid before '68. It was in the least advantageous conditions, but after '68 it became one of the top

[47] Montedison Archive, Box 1, Folder 4, Interview with Bertolo, p. 11.

[48] *Ibid.*

[49] Montedison Archive, Box 13, Health in the Factory, p. 7, Vezzana.

[50] Montedison Archive, Box 2, Folder 8, Interview with Canepa, part 4, p. 11.

[51] Fiat Automobiles S.p.A. was the largest automobile manufacturer in Italy, located in Turin, 90 km from the Chemical Plant of Spinetta Marengo. After it merged to form Fiat Chrysler in 2014, in 2021 it was acquired by Stellantis Europe.

categories, second only to seaside workers and even more highly paid than the metalworkers."[52] Achieving this new level of economic well-being may therefore have played a significant role in reducing protests, essentially *monetizing* the high exposure to risk.

The third interpretation, which we find most convincing, is presented by Lombardi, a former local administrator and expert on the chemical facility, and it is more closely linked to the Alessandria area. His reading is that the alliance between workers and inhabitants of Spinetta, fundamental in the movements of the late 1960s, could no longer be recreated. The importance for the labor movement in earlier phases of forging "an alliance between workers and the village" was achieved through "raising awareness on the issue of health."[53] The internal struggles benefited the suburb of Spinetta as a whole because,

> …when the working class manages to achieve improvements, the whole economy benefits. On that occasion, we managed, so to speak, to forge a certain kind of unity between workers, traders, and other social strata in our suburb, at least in those years [...] This alliance was possible because they were content with a lower salary, while also working in their own garden. Later, the demands increased and talking about health started to become taboo.[54]

However, by the end of the 1970s and across the 1980s, this momentum constantly clashed with the need, expressed mainly by trade unions and local authorities, to safeguard employment in a factory which, in the wake of the closure of the most polluting departments, saw its workforce reduced from 1,612 in 1976 to 1,469 in 1979, then to 1,293 in 1981 and finally to 1,094 in 1983. From this moment on, the focus on industrial risk and damage gradually shifted from the chemical plant to the local area, and from the trade unions to associations promoting environmental protection around the factory. In Spinetta, these elements should be seen as precursors to what we call *noxious deindustrialization*, where the constant threat of layoffs fuels divergence between workers and trade unions with respect to the territory and environmental associations. At present the discovery of contamination does not seem to have been matched by a mobilization within the factory. The threat of industrial decommissioning, alongside a deep uncertainty in the local community, seems to have stifled any demand for social and environmental justice.

8. Discussion

We have focused on the processes of toxification of bodies, noxiousness and the acceptance of risks over the lifetime of the chemical plant activities in Spinetta Marengo. Before health became a central issue in the workers' demands in the late 1960s, the conditions under which the factory operated exposed them to constant risks to their safety.

The normality with which the link between work and death was declared offers us a valuable opportunity to show the relationship between workers and the harmful environment in which they worked. The consequences of their daily and constant contact with carcinogenic and harmful substances were seen on the bodies of those who worked there in a direct, tangible and *visible* way. The fact that the progressive degradation of their health could be constantly verified made it impossible to ignore its effects. It is therefore legitimate to ask ourselves, faced with such undeniable evidence of harm, how was it possible for workers to accept such working conditions? The most obvious answer is a widespread feeling of resignation, linked to the perception that things could not be otherwise, and that there was no alternative.

Doctors were key figures in giving legitimacy to the illnesses of many workers because they should have defined them as occupational, and thus linked to the harmfulness of their work. The fact that they not only did not do this, but instead actively undermined the workers' experience by concealing the cause of certain illnesses, was unhelpful for workers trying to challenge the existing power relations. The instrumental use of technique, in the form of medical technique, served the plant's management in neutralizing claims that would have become

[52] Montedison Archive, Box 6, Folder 35, Interview with Vazzana, p. 7.
[53] Interview with Claudio Lombardi, Spinetta Marengo, 3/5/23.
[54] Montedison Archive, Box 5, Interview with Spinolo, p. 3.

stronger if they were supported by medical reports, which instead obfuscated the causes of illness or supported alternative explanations.

This asymmetry of power between management and workers was reflected in the working conditions to which they were subjected, and in the management's ability to construct a discursive and epistemic framework that made conditions acceptable. Management, using the expert knowledge of the doctors in its service as a proxy, was even able to shape the self-perception that workers had of their own bodies and diseases. Workers were considered as expendable bodies, usable by the factory for its manufacturing, and once they were deemed unfit for work due to injuries, they were demoted or dismissed. This power in making definitions began to be challenged at Montecatini in Spinetta Marengo in the early 1960s. At that time, a series of internal changes in the composition of the factory and a high number of work-related deaths shook workers' consciences like never before, opening new spaces for negotiating, defining and the acceptance of risks.

At the turn of the 1960s and 1970s, three main circumstances arose that were conducive to the outbreak of conflict. There was an exploited and underpaid working class, which worked in conditions of deep distress and for which death and injury were part of everyday life. In its memory and experience, this class had stored a long series of images of this slow violence, which clearly emerges in the many interviews reproduced above. There was an establishment that used all means at its disposal to avoid dealing with health concerns, repressing internal dissent by way of monetary compensation and controlling misleading medical reports, or even resorting to outright mobbing through its private security apparatus.

Then, there arrived a new generation of workers, which had been present in the factory for almost ten years and had already experienced phases of intense activism. The important novelty of introducing the Labor Clinic avoided the prospect of mediating its findings through the factory. The Clinic's reports were fundamental in supporting and justifying the practice of "white strikes." These were a new form of protest that was only made possible by the authority granted to the Clinic, whose had the jurisdiction to be recognized as legitimate. Management could not ignore its verdicts, thus giving workers an authoritative justification for not working. The antagonistic use of medical techniques was the most important new factor of the protests of these years: never had workers had such an effective weapon at their disposal. This reappropriation of medical knowledge produced a momentary realignment of power imbalances, putting workers in a position to oppose management on the same playing field that had long contributed to their subordination.

9. Concluding remarks

To conclude, we can now add a few elements for consideration, falling into three areas: slow environmental violence as a social process; time and memory as a dimension of power; and ecological loss in contaminated communities.

The Spinetta Marengo chemical facility presents many elements having analogies with the distributive and procedural injustices resulting from slow environmental violence. A lengthy chemical contamination was justified through negotiations and compensation payments, within the framework of a deeply asymmetrical system of power that delegitimated environmental damages and crimes. However, it would be wrong to assume that such violence was *out of sight*, or not perceived as violence. Our reconstruction of the evidence has showed that the workers' perception of *noxiousness* was present throughout the plant's history, made invisible by forms of repression of dissent and a narrative violence that also made use of scientific discourse. This violence was visible to those who suffered it, but was made acceptable by repressive and discursive frameworks, like the parish priests and local police marshals who played a key role in recruiting the workforce and the use of sections as "*il Piazzale.*" The tension that mounted during the 1960s and 1970s gave way to a crucial period in the historical struggles for the workplace, which thanks to the contestation based on expert knowledge – in particular much more *democratic* medicine – succeeded in closing polluting sectors, but also in gaining compensation and negotiations for the damage suffered.

Time plays a key role here, as a form of power, blurring *present* responsibilities in the prolonged irresponsibility of *past* decisions, and postponing prospects for repair and remediation to uncertain *futures*.[55] Visiting the plant and asking the vice director what has become of the toxic and noxious departments we have discussed in this article, we were told that nothing remains of them. The management thus employs three discursive mechanisms linked to different levels of temporality: the past is constantly concealed, repressed and disowned; the present and its contradictions are denied; and what remains is an unspecified future in which modernity's promises of development, progress and prosperity should finally come to fruition, rewarding us for the sacrifices made so far. Governing memory is thus the means through which time is translated as a form of power. The current company that owns the chemical plant has an explicit memorial strategy, aimed at "cleansing" its image of its "past" toxicity. In parallel, it raises the threat of leaving the area in order to continue to legitimize its occupational blackmail in an area defined as mono-industrial; the risk of decommissioning without remediation and reparation represents the uncertain and threatening specter of the "future."

Disregarding the period of conflict also weakens the ethos of the right to health, both within trade unions working inside the factory and movements in the surrounding area. Demands for health conditions slowly lose their grounds and their ability to make claims. The issue of health slowly slips into the forgetfulness from which it had emerged, and remains to this day an issue that is difficult to address, especially in the Spinetta Marengo area. This loss of memory of past conflicts reinforces the return of a "period of silence", in which exposure to toxic and harmful substances, accidents at work and occupational illnesses become merged with experiences and memories, narratives and knowledge, and many compromises and negotiations about risks long considered as the inevitable counterpart of technical progress. These are "toxic bodies" or toxified bodies, transformed by long processes of contamination into texts that tell stories, within which the phenomena of pollution, illness and social injustice are written.

This brings us to the third and final aspect, highlighting our approach to investigating the system of relations between the working-class community and its industrial environment. Over 120 years, the chemical facility has strongly marked not only the economic, organizational and political order, but also the ecological and moral order. As we have seen, nature has been controlled for production purposes, through infrastructures for the organization of water, soil and air. On the other hand, the progressive extension of the factory, including its material and immaterial ramifications, has produced an "industrial landscape", a symbolic and aesthetic transposition of a moral order linked to capitalism and working-class labor. Our discussions of contamination deconstruct an institutional memory that highlighted the progressive successes of Fordism and presented a reassuring image of the factory as an integral part of a 'hard-working' environment, a symbol of well-being and technological promise. Local residents and the workforce have experienced a sense of impoverishment, economic insecurity, powerlessness and humiliation, in addition to present and future fears for their health and the environment. Thei identity and relations with their living spaces have been redefined.

The socio-political impasse in Spinetta Marengo is more complex than the *occupational blackmail* of concealing pollution to ensure livelihoods. Union reorganization *inside* the factory and the recovery of counter-narratives *outside* the factory have challenged the status quo. A multitude of residues now coexist with occupational blackmail, the remains of all the failed promises made by modernity. Physical residues, in the bodies of the people and the surrounding area; political residues, which have subjugated an entire city and made it hesitant to act and take sides when faced with increasingly definitive evidence of the toxicity of the factory; cultural residues, which cancel and normalize the present, making toxification and environmental impoverishment acceptable. By increasing the visibility and experience of those who live through processes that profoundly alter the environment and bodies, with such serious repercussions, it is possible to break away from invisibility and give value to a suffering that previously remained confined.

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[55] The 2025 Syensqo website mentions extensive ongoing remedial works, including hydraulic barriers and a soil vapor extraction plant: https://spinettamarengo.syensqo.com/lo-stabilimento/la-storia/20022023. The company has also successfully sued Edison for failure to disclose pollution when the plant was purchased in 2002: https://www.syensqo.com/en/press-release/syensqo-compensated-edison-misrepresentations-relation-italian-facility-spinetta.

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