



Comments under Article 36 ECHR and Rule 44 § 3 of the Rules of Court in *Francesco Cordella and others v. Italy* and *Lina Ambrogi Melle and others v. Italy*, Applications No. 54414/13 and No. 54264/15, lodged on 29 July 2013 and 21 October 2015 respectively

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Introduction

The aim of the present document is to provide the Court with information about the current environmental and health status in the geographical area of Taranto (Italy) considered in the proceedings *Francesco Cordella and others v. Italy* and *Lina Ambrogi Melle and others v. Italy*, Applications No. 54414/13 and No. 54264/15, lodged on 29 July 2013 and 21 October 2015 respectively, and about the effects of specific and recent national laws on the environmental safety and on the respect of human rights in the same area.

1. Environmental and health status in the area of Taranto

The present section is aimed to provide the Court with an update of the evidence previously transmitted to the Court (attachments 1 to 8 of the application No. 54414/13), and to depict the environmental and health status in the city of Taranto, according to the scientific reports available in the published international medical literature.

1.1 Update on evidences regarding the environmental status in the area of Taranto

The first report documenting the contamination by polycyclic aromatic hydrocarbons (PAH) of mussels (*Mytilus galloprovincialis*) of the “Mar Piccolo” (Ionian Sea, gulf of Taranto) has been published in 2001. Authors underlined that: “the mussels that showed the highest total concentrations of PAHs were collected from stations affected by stronger human activities (industrial fallout, urban wastewaters, and contaminants transported via riverine discharge)” suggesting “**the need for an increased effort in controlling sources of pollution** in this area recognized as one of the most productive mussel-farming areas in the Italy”¹.

Despite this recommendation, until now neither effective control of sources of pollution nor remediation procedures have been performed.

In 2014, a critical contamination by dioxins (PCDD/Fs) and polychlorinated biphenyls (PCBs) of *Mytilus galloprovincialis* from the Mar Grande and the Mar Piccolo of Taranto – with the highest values in the first inlet of the Mar Piccolo – was reported. Authors stated: “the seasonal concentrations trend showed a relevant increase of dioxin and dioxin-like PCBs TEQs [Total Toxicity Equivalence] during the summer months, exceeding the limits set by the European Community for food and foodstuff” and, once again, recommended: “**reducing PCDD/Fs and PCBs is necessary to decrease contamination levels in order to safeguard marine ecosystem and human health in the Taranto area**”².

Similar reports have been published on a regular basis over time. A more recent study published in **July 2016** confirms “higher contamination of sediments from the First Basin [Mar Piccolo - Gulf of Taranto] observed by previous researches, particularly for Cu, Hg, Pb, total PAHs, and total PCBs” and “long-range selective transports of PAHs”³. Another study published in **July 2016** demonstrates the presence, in edible marine organisms from different trophic levels and feeding behaviour collected in the Mar Piccolo (bivalve molluscs, gastropod molluscs, commercial species of fish), of concentrations of heavy metals (Cd, Pb) and PCB **over the limits set by EC Regulations**. In particular, “the concentration of six target PCBs was **about five times higher** than the EC limit”.

Authors have also estimated the weekly intake in children and adults, both for metals and PCBs, and stated that: “the estimated intakes of those trace elements included in this study through seafood consumption by the population **exceed the provisional tolerable weekly intake recommended by the Joint FAO/WHO Expert Committee** on Food Additives for Cd and Hg in the *H. trunculus* and *T. trachurus*, **especially in children**”, and that “hazard quotient (HQ) for Hg and Cd was >1 in the children for *T. trachurus* and *H. trunculus* consumption. As regard non-dioxin-like PCB (NDL-PCB), the estimated intake were always above the 'provisional guidance value' (70 ng/kg body weight) Arnich et al. (Regul Toxicol Pharm 54: 287-2, 2009) for all sampled organism”.

Also these Authors conclude that: “**an extended remediation programme is necessary to safeguard marine ecosystem, human health and, not less important, the economic activities, in the Taranto marine area**” (July 2016)⁴.

Evidence on contamination of environmental matrices and food chain are paralleled by those on bio-monitoring in people living in the same area.

Relevant concentrations of dioxins (highly dangerous group of toxic substances scarcely biodegradable, bio-storable and transmittable with the alimentary chain) have been detected **in breast milk samples from women living in Taranto**. In particular, Authors described that “toxic equivalents (TEQs in picogram per gram fat) of four breast milk were **far above the legal limit for human consumption** of 3.0

pg/g; their estimated daily and weekly dietary intake were **almost 5-20 and 10-40 times higher**, respectively, **than the tolerable intake values established by the World Health Organization**".

A recent study published in **June 2016** evaluates the exposure to toxic metals in the city of Taranto by means of scalp hair analysis, reporting that "in the industrial area of Taranto, **high levels of barium, cadmium, lead, mercury, nickel, and silver** were observed in comparison with other Apulia areas" and that "the risk odds ratios (ORs) for observing values above the 50th percentile were elevated for mercury and fish consumption, uranium and milk consumption, lead and female sex, and aluminum and mineral water consumption"⁵, strongly pointing to an introduction of these toxic metals in the human body due to a contaminated alimentary chain.

1.2 Update on evidence regarding the health status of people living in Taranto

The last update of the so-called "SENTIERI" study, published in 2014 ("Sentieri kids"), was aimed to analyze the health status of children. It disclosed, in the area of Taranto, an **excess of mortality (+20%) in the first year of age** (62 observed, SMR=120; IC90% 98-148) as compared with the expected figure on a regional basis, with an **excess of 45% of perinatal diseases**⁶. The report also observed an **excess of risk for cancer incidence in the age range 0-14 years** (SIR 154, IC90% 102-224, +54% as compared with the expected figure on a regional basis), and that in adolescence "still remain the **[risk] excesses** observed in pediatric age for children admitted in hospital **for acute respiratory diseases** (2563 observed, SHR= 106; IC90% 102-109), in the case of **general mortality** (SMR=112; IC90% 96-132) and of **cancers** (SIR=131, IC90% 94-178)"⁶. The Authors, coming from the National Institute of Health, underlined "**the urgency of interventions aimed to restore environmental quality**", due to "**the excess of incidence of cancers and respiratory diseases among children and adolescents**"⁶.

The last update (May 2016) of the cancer registry by the provincial health agency (ASL Taranto) still documented higher rates, as compared with figures from Southern Italy, of non-Hodgkin lymphoma, liver, kidney, prostate and stomach cancer in men, breast cancer in women, colon, thyroid, brain cancer and melanoma in both sexes (http://www.sanita.puglia.it/documents/36057/8003901/sintesi_dati_registro_tumori_stampa_2016/c4c7dc4f-7ed9-4e61-b6e9-05903bbc8093).

More recently (**September 2016**), a cohort study including 321,356 people living in Taranto and studying the long-term effects of air pollution on mortality, demonstrated a **clear association between both industrial PM10 and SO2 originated from ILVA and natural mortality**, with the strongest associations observed in the case of heart diseases and acute myocardial infarction. Authors demonstrated that these health

effects were due to both the **recent exposure** (previous 5 years) and the exposures in the distant past (30-35 years lag) ⁷.

In the same cohort, another analysis demonstrated an increase of risk of 2.66% in natural mortality and of 8.39% in respiratory mortality related to 1µg/m³ variation of industrial PM10 ⁸.

Data from the Regional Registry of Congenital Malformations recently revealed the presence of a prevalence of **congenital malformations** significantly higher in Taranto (+10%), as compared with regional figure, with significant excesses in the case of malformations of limbs and central nervous system (http://www.ccm-network.it/imgs/C_27_MAIN_progetto_382_listaFile_List11_itemName_0_file.pdf).

Furthermore, a study considering women living in five industrial cities in Apulia (including Taranto) proved a significant correlation between PM10 and ozone levels and the number of **spontaneous abortions** ⁹.

Recent (2016) preliminary data from a regional observatory for **Autism Spectrum Disorders** (ASD) depicted in the province of Taranto (year of analysis: 2014, age range 0-17 years) the highest prevalence of these diseases (4.44 x 1,000), as compared with the average regional value (3.41 x 1,000) and with other Apulian provinces (values x 1,000: BAT 3,63, Lecce 3,56, Bari 3,38, Brindisi 2,89, Foggia 2,54). From this point of view, it has to be underlined that air pollution is responsible for cognitive disorders during childhood mainly due to oxidative stress ¹⁰, and several studies linked ASD with pollution, in particular for exposures occurring during periods of marked neuro- and gliogenesis ¹¹. The risk of ASD significantly increases in the case of fetal exposure to air pollutants ^{12, 13}, in particular during the third trimester ^{13, 14}. Gene-environment interaction through epigenetic mechanisms seems to have a major role in increasing the risk of ASD in susceptible children ¹⁵, and definite inherited alterations of DNA-methylation could affect gene expression, contributing to ASD susceptibility ¹⁶.

It is worth of noting that, besides data on **acute outcomes** in adults, epidemiological data regarding **children** (age range 0-14 years), at least for diseases with well-know relationships with environmental pollutants (i.e. respiratory disorders, perinatal mortality, spontaneous abortion, congenital malformations, ASD, cancer) point out **health risks deriving from recent (short-term) environmental exposures**, mainly occurring during early life (i.e. in utero) and/or during the first years of age.

These evidence are particularly relevant in respect to the considerations expressed in the following section of the present document.

2. Effects of specific and recent national laws on the environmental safety and on the respect of human rights in the area of Taranto

The most recent national law concerning the ILVA steel plant (**DL n. 98/2016**) is the last of ten laws (in about 4 years) specifically aimed to ensure the continuing steel production in Taranto, irrespective of the documented environmental damages and health risks caused by the plant to the people exposed to high level of pollution (absent any adequate remedies).

In response to the recommendations of the National Institute of Health about “the urgency of interventions aimed to restore environmental quality”, mainly due to “the excess of incidence of cancers and respiratory diseases among children and adolescents”⁶, the DL n. 98/2016 allows a further and prolonged extension of the time limit established to complete the environmental plan, together with the possibility to revise the plan through mechanisms that do not seem appropriate to protect public health, and that probably will determine further health damages and further health spending growth.

The initial version of the Integrated Environmental Authorization (“AIA”, Autorizzazione Integrata Ambientale) stated that the deadline for the completion of prescriptions listed in the environmental plan was August 4, 2016. Then, the D.P.C.M. of March 14, 2014 postponed this time limit to June 30, 2017, and, finally, D.L. n. 98/2016 set it to **December 31, 2019**.

The need to complete the environmental plan is obviously based on the evidence that the operational activities of ILVA are carried out in unacceptable conditions and to the detriment of environmental quality and public health, as shown by the above mentioned scientific reports.

Furthermore, a risk assessment analysis performed by the Regional Environmental Agency (ARPA Puglia, http://www.isprambiente.gov.it/it/garante_aia_ilva/valutazione-danno-sanitario/Rapporto_VDS.pdf) has clearly demonstrated that the full implementation of the prescriptions listed in the environmental plan will not be able to guarantee to people living in Taranto the environmental safety and a health risk lower, or at list comparable, to that faced by other regional/national areas. As an example, according to estimates by ARPA Puglia, after the completion of the environmental plan the emissions of Cd and Pb by ILVA will be virtually unchanged (lowering of less than 6%), the air pollution by hexavalent chromium and benzene will increase by 15% and the PCB concentration at ground level will also rise. According to estimates by ARPA Puglia, after the completion of the environmental plan 12,000 residents will be still at risk for cancer, not considering other acute, sub-acute and chronic diseases involving all age groups.

In this context, even if we do not consider the possible rise in the rates of cancer and/or chronic diseases in adults (linked to a long-term latency), **the extension of the time limit** for implementing the environmental prescriptions up to December 31, 2019 (DL n. 98/2016), **will unavoidably contribute, for the years ahead, to the unacceptable increase of health risks** – specifically related to acute and sub-acute conditions (i.e. respiratory and cardiovascular diseases/mortality, congenital malformations, spontaneous abortions, perinatal disorders) – and of pediatric cancers, which require a shorter latency as compared with adults.

Thus, the decision to allow a further extension of the deadline, as a matter of fact, is meant to tolerate the persistence, for the future years, of a critical environmental pollution and of the related health damages, particularly in children.

Furthermore, according to the risk analysis from ARPA Puglia, also when the environmental plan will be completed, emissions from ILVA will not allow people to live in a safe environment, still generating serious health risks in all age groups.

What is more, throughout the time allowed by the extension, the exposure of pregnant women will determine the **appearance of diseases in the next generations**, as clearly explained by several studies on the origins of non communicable diseases, documenting a critical role for environmentally-induced *epigenetic changes* (heritable variations in gene activity and expression that occur without alteration in DNA sequence¹⁷⁻²⁰), negatively affecting the “*fetal programming*”²¹, with later health consequences of *in utero* and/or perinatal exposure and even trans-generational transmission of risk^{22,23}.

One of the major effects of the DL n. 98/2016 (and of the previous nine laws) is the **impossibility to promptly apply primary prevention measures** in a geographical area clearly **discriminated** from the environmental and sanitary points of view, with an unacceptable persistence of high level of health risk.

Besides the health damages for the present and in the future generations, the delay envisaged by DL n. 98/2016 and the ongoing steel production will also cause significant consequences in terms of **health costs**, estimated by the European Environmental Agency (EEA) in 283 million Euros per year (period 2008-2012), considering the sole pollutants emitted by ILVA²⁴. As far as the ILVA plant is concerned, the EEA also estimates in 103 million Euros per year the aggregate costs linked to the reduced life expectancy (years of life lost)²⁴. Even considering a limited operational activity of the steel plant until the completion of the environmental plan, it is realistic to estimate, in the next years, a further rise of health-related costs in the order of hundreds million euros, in addition to the economic damages caused to productive sectors (i.e. fishing,

agricultural, farms), strongly penalized by the pollution, which has been lasting for decades without any efficient remedy.

The DL n. 98/2016 also defines a new procedure concerning possible modifications of or integrations to the environmental plan. Before this law, changes in the environmental plan had to be approved by the Ministry of Environment, the Ministry of Health and by the National Institute for Environmental Protection (ISPRA), taking into consideration the environmental impact of the proposed plan (the “VIA, Valutazione di Impatto Ambientale”).

According to DL no. 98/2016, the future owners of ILVA can propose amendments to the environmental plan, with the proposal being simply evaluated by an “expert committee” and with the possible exclusion from the evaluation process of the National Institute for Environmental Protection (ISPRA), an authoritative technical committee, which guarantees impartiality at a National level. This provision is dangerously unbalanced, favoring the needs of privates (the new owners) to the detriment of the health of the exposed people. The absence of adequate and well codified procedures of risk assessment (not imposed by law) puts at serious risk the future of the environment and the health safety of the exposed people, above all considering the absence, in the “expert committee”, of professionals expert in epidemiology, primary prevention and public health.

Thus, the new procedure established by the above mentioned law does not seem to be able to adequately guarantee the health protection of the people living in Taranto and in the surrounding area, and, on the contrary, is potentially responsible for further environmental and health damages.

The DL no. 98/2016, together with the previous nine laws, is aimed to guarantee the steel production of the ILVA plant, irrespective of environmental and health protection. The reiterated interventions by the Government have lead to an expensive model of public health, simply based on the periodical quantification of environmental and health effects and to its practical management (in terms of assistance to previously determined damages), affecting and discriminating a geographical area, whose residents consciously face, by decades, high health risks due to continuing pollutant emissions and completely ineffective remedies, risk assessment analysis and primary prevention measures, in clear violation of their human rights.

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