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THE "HEALTHCARE" DISASTER: *De Iure Condito and De Iure Condendo analysis of Italian Legislation for the protection of Public Health.*

The phenomena related to exposure to hazardous substances, which may have harmful effects on human health, bring into question the issue of industrial risk management and raise issues of liability for the various parties involved. The inherently human origin of the productive activity behind so-called environmental-health disasters, characterized by harm to both individual and public health, almost inevitably leads to an investigation into potential liability profiles, including criminal liability, of specific individuals within the corporate hierarchy to whom the event – being the materialization of industrial risk – can be attributed. The paper, therefore, aims to assess whether the sanctioning response to the phenomenon of so-called health disasters can be considered satisfactory in the Italian legal system. From an anthropocentric perspective, the analysis will evaluate the adequacy of criminal law as a means of protecting the environment in itself, considering not only offenses labeled under the term "disaster" but also the broader phenomenon described. The goal is to determine whether the categories of criminal law have undergone genuine distortions. In order to achieve this objective, disasters as legal offenses will be examined with a twofold purpose: on the one hand, to highlight a recent trend in domestic jurisprudence to resort to this category in repressing the phenomena under investigation; on the other, to understand whether, also from a de iure condendo perspective, this is the most appropriate category of offenses to invest in to achieve the intended protective objectives.

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1. Introduction

The concept of *environmental-health disaster* represents one of the most complex and pressing frontiers of contemporary criminal law, where the protection of the environment and public health are inextricably intertwined. The growing incidence of large-scale harmful events – such as industrial contamination, prolonged exposure to toxic substances, or epidemiological crises linked to environmental factors – has highlighted the need for a repressive framework capable of capturing the collective and systemic dimension of harm.

In this context, the judiciary has frequently resorted to the offence of *unnamed disaster* (Art. 434 of the Italian Criminal Code), using this incriminating provision to fill legislative gaps. Subsequently, the Italian legislature – prompted by European initiatives to address shortcomings in the national legal system – introduced in 2015, through Law No. 68, the offence of *environmental disaster* (Art. 452-quater c.p.), defined as the irreversible or exceptionally burdensome alteration of an ecosystem's balance, or as an offence against public safety due to the extent and severity of the harmful effects. Although the primary legal interest protected is the environment, the provision explicitly acknowledges the health-related relevance of the disaster, paving the way for an integrated interpretation that elevates collective health as a protected legal interest under criminal law.

From this perspective, the environmental-health disaster emerges as a hybrid offence, straddling environmental criminal law and public health protection, and requiring an interpretative approach that considers epidemiological evidence, diffuse causality, and the potential liability of collective entities.

Accordingly, there remains a strong case for introducing an autonomous offence of *health disaster*, capable of capturing the specific features of harm to public health without relying on expansive interpretations of either the environmental disaster (Art. 452-quater) or the unnamed disaster (Art. 434 c.p.). This is especially relevant given that jurisprudence has begun to recognize the capacity of environmental events to produce significant health effects, as in the *Tirreno Power* case, where excess mortality and morbidity were deemed symptomatic of a disaster.

This paper therefore aims to explore the figure – currently not expressly provided for in Italian law – of the *health disaster*, assessing the opportunity, from a *de lege ferenda* perspective, to introduce such an offence into the national criminal framework.

Health emergencies – from industrial accidents to full-scale pandemics – have increasingly revealed the need for criminal protection that addresses not only harm to individual physical integrity, but also the systemic compromise of collective health.

Within legal scholarship, a debate has emerged on the advisability of a standalone offence that reflects both the quantitative and qualitative impact of serious health-related events.

2. The concept of Public Health in Italian Criminal Law

According to the traditional view, dominant in the 19th century, *public health* is considered a collective interest: the object of endangerment is a legal good which, although belonging to individual subjects, is not protected based on individual ownership, but rather in relation to its indistinct relevance to a potentially indeterminate group of people. In the context of protecting public health, what becomes relevant is the life and health of the potentially affected community: the individual dimension reflects the collective one, insofar as – on this different level of communal risk – the health of one is equivalent to that of another, and it is not necessary to identify the specific individuals whose health has actually been endangered. If, in protecting life and health, the legislator requires the endangerment of the community's health, it follows that the legal good of public health must be protected at the threshold of danger. This connection is inevitable: the offense coincides with the emergence of common danger, regardless of actual harm to individual persons, which is typically addressed by criminal provisions protecting personal integrity.

The notion of *common danger* has been the normative model for protecting public health since the enactment of the current Criminal Code in 1930. This model differs from both concrete and presumed danger: *abstract danger* – understood as an intermediate form between concreteness and presumption – is the paradigm chosen by the legislator to anticipate protection and prevent harm to public health. The key factor of abstraction lies in the irrelevance of the specific health conditions of individuals, due to the chronological threshold set for evaluating danger.

As for the assessment of dangerousness, empirical verifiability and epistemological grounding of the prognosis are the objective hallmarks of the criminal offenses in question. By presupposing a specific nomological complement – i.e., scientific evidence – the concept of danger to public health is linked to scientific laws (both universal and statistical-probabilistic). Although abstracted from specific factual circumstances, it assumes the characteristics of *real danger*. The criterion underlying the assessment of dangerousness is essentially that of general causality (e.g., the ability of a pharmaceutical product to generally cause or fail to prevent certain pathologies).

This is confirmed by the fact that none of the offenses described in Chapter II, Title VI of the Criminal Code require, among their constitutive elements, actual harm to the life, physical integrity, or health of specific individuals. Such harm, at most – and only

in certain cases – is considered for the purpose of aggravating the penalty. Regarding the relationship between common danger offenses and harmful event offenses, three scenarios can be outlined.

If the typified conduct results in death or personal injury to one or more individuals, there is a case of *formal concurrence* between offenses against public safety and those under Articles 575 (intentional homicide) or 582 (personal injury), provided the harmful event was foreseen and intended by the perpetrator.

If the result was not intended and occurred due to negligence, the concurrence involves offenses under Articles 589 (negligent homicide) or 590 (negligent injury), in the form provided by Articles 83 and 586.

If death or injury results from the negligent commission of the act, there is a case of *formal concurrence of negligent offenses*.

In this context, the framework for protecting public health has been further strengthened by the introduction of *environmental crimes* under Title VI-bis of the Criminal Code. These provisions concern *multi-offensive offenses*, specifically aimed at protecting not only the legal good of the environment but also life and health. Particularly relevant are the offenses of "death or injury as a consequence of environmental pollution" (Art. 452-ter) and "environmental disaster" (Art. 452-quater).

These two offenses represent a significant innovation in the Italian criminal law landscape concerning environmental protection, while also presenting evidentiary complexities that warrant deeper reflection.

3. Offenses against Public Safety as a framework for the protection of health

In light of the preceding discussion, the legal interests protected by the criminal provisions grouped under Title VI of the Italian Criminal Code are *public safety* and *public health* – supra-individual goods safeguarded through *endangerment offenses*. The fact that the law provides structured protection for a meta-individual good (i.e., safety and health not of individuals but of the public) leads to the classification of the danger as "common": what is criminalized is not the endangerment of a single individual's integrity (*individual danger*), but rather that of an indeterminate number of people (*common danger*), resulting from the particular mode of aggression against the protected interest.

These modes of aggression, as codified in Chapter I (*common danger offenses through violence*) and Chapter II (*common danger offenses through fraud*), follow two distinct patterns, although the violence/fraud dichotomy is widely considered inadequate.

More precisely, it is now well established that *common danger offenses through violence* are characterized by a "material damage event of unavoidable gravity, complexity, scale, and diffusiveness," upon which is layered the additional requirement of *teleological projection* – that is, the likelihood of injury or death affecting an indeterminate plurality of individuals, which constitutes the danger to public safety.

The offenses listed under violent common danger crimes (e.g., arson, natural disasters, transportation-related catastrophes) reflect this "dual-parameter" model: a macro-event of damage to property, typically violent and traumatic, causally linked to the perpetrator's conduct and capable of triggering uncontrollable causal chains affecting the life and physical integrity of many people. These crimes typify situations that generate *common danger*, whose defining features are the *indeterminacy of victims* and the *diffusiveness of effects*.

Regarding victim indeterminacy, the prevailing scholarly view favors a *quantitative dimension* – requiring that the danger target a broad group – over a *qualitative dimension*, which would refer merely to the inability to identify victims in advance. As for diffusiveness, in disasters under Chapter I, it is the scale of property damage that renders the danger widespread, expanding through contextual proximity.

Thus, due to the destructive nature of these events, the legislator seeks to protect a *diffuse victim*, who passively suffers (or could suffer) the consequences. The requirement of diffusiveness is met when it is plausible that multiple individuals are within the range of the hazardous source. To avoid applying these provisions to cases involving mere material damage, it is essential to verify – through a comprehensive post-event prognosis – that the event's scale made it likely for people to be exposed to the danger, even if no one was actually present.

According to authoritative doctrine, this criterion allows for a unified reading of typical disasters, resolving inconsistencies between offenses that require actual danger and those where danger is presumed. On one hand, accepting merely potential (not actual) presence avoids retroactively individualizing victims and preserves the "indeterminate victim" nature of these crimes. On the other hand, requiring this verification even when danger is presumed narrows the gap between *typicality* and *offensiveness*, which is a hallmark of presumed danger offenses.

Moreover, this gap is already mitigated by the semantic weight of certain legislative terms, which imply that only damage events capable of endangering an indeterminate group – i.e., a *disaster* – are criminalized.

In contrast, *common danger offenses through fraud*, governed by Chapter II, exhibit a different phenomenology. Here, there is no true "disastrous" event as previously described. These offenses involve the *dangerous adulteration* of substances intended for

public use, where the actual damage may be minimal. The danger to health arises from the public destination of the adulterated goods, creating a "roaming danger" that, if unchecked, can permeate the entire production and consumption cycle.

In these cases, *victim indeterminacy* and *danger diffusiveness* are the pillars of criminal typicality. Unlike violent disasters, the danger spreads through propagation, not through a singular macro-event. The concept of *fraud* may refer either to the insidious nature of the means used (e.g., food, medicine, public water) or to the fact that – unlike in disasters where victims are passive – the feared harm presupposes *victim cooperation*, such as ingesting the dangerous substance.

For this class of offenses, the legislator explicitly refers to danger. Exceptions include *epidemics* and *poisoning*, where the gravity of the terms used implies that only events with significant diffusiveness are criminalized, and two offenses related to pharmaceuticals. In any case, the likelihood of contact with the substance is implicit in its public distribution. Danger exists when the substance is proven to be generally harmful – e.g., through epidemiological evidence.

3.1 The provisions under articles 434 and 437 of the Italian Criminal Code

These brief remarks on the structure of Title VI serve as a functional premise for the continuation of the analysis, given that the "rediscovery of disasters" as a means to prosecute large-scale exposure to toxic substances (so-called environmental-health or purely health-related disasters) has occurred through the use of *unnamed disasters*, codified under Article 434 of the Criminal Code, and Article 437. To fully understand the interpretative distortions affecting these offenses, it is necessary to outline the structure of the aforementioned provisions, noting from the outset that both fall within the category of *disasters in the strict sense* under Chapter I. This clarification, aimed at highlighting the topographical placement of the norms within Title VI, is relevant insofar as the system in which a provision is embedded should guide its interpretation.

It is important to emphasize that the *unnamed disaster* encompasses the distinction between *first-degree prevention offenses* – which punish the occurrence of the disaster (from which a danger to public safety evidently arises) – and *second-degree prevention offenses*, which punish conduct that precedes and may lead to the disaster. Both provisions fall within this framework, albeit with different formulations. Specifically, Article 434 punishes, in its first paragraph, conduct aimed at causing a disaster when there is a danger to public safety, meaning the danger precedes the actual occurrence of the event. Article 437, on the other hand, punishes, again in its first paragraph, the omission, removal, or damage of safety measures intended to prevent a disaster.

The key difference lies in the fact that Article 437, situated within the micro-system of workplace safety, does not require the actual realization of danger, creating tension with the principle of offensiveness. Nevertheless, prevailing interpretation assigns a dimension of danger to the provision by emphasizing the preventive purpose of the safety measures, which are designed to avert accidents or disasters.

Both provisions include, in their respective second paragraphs, an aggravating circumstance in the event that a disaster occurs. Setting aside the debate over whether this constitutes an autonomous offense or a mere aggravation, when the disaster is punished (named or unnamed), the incrimination is tied to an event (the so-called *material referent*) marked by expansive and diffuse potential for harm – a super-individual teleological projection. The event must therefore be assessed both (i) diagnostically (what happened) and (ii) prognostically (what could have happened).

Diagnostically, it is necessary to verify the occurrence of a disaster and its attribution to the perpetrator, both objectively and subjectively. This involves a causal judgment, establishing the link between the conduct and the disaster. While named disasters pose fewer definitional challenges, Article 434 presents difficulties in defining the disaster itself. A similar issue arises with Article 437, which is considered a "special case" of the general unnamed disaster under Article 434, distinguished by the fact that the event results from the willful omission or removal of safety measures.

By referring to a "disaster," the provision implicitly includes both typical and "other" disasters, raising similar uncertainties about its scope. Moreover, as an alternative to disaster, the provision also punishes the occurrence of an *accident* (a violent event), which is an individual occurrence and appears inconsistent with the collective protection framework in which the provision is situated. In this case, the notion of indeterminacy refers to the mere *ex ante* unpredictability of the potential victim. Through a well-established expansive interpretation – though not without issues regarding the principle of legality – jurisprudence has included within the concept of accident the so-called *illness-accident*, i.e., a disease with an aggressive pathogenesis that may be considered a traumatic event.

It is debated whether the provision applies solely to workplace-related events (internal risks) or also to external occurrences resulting from omissions of internal safety measures. In practice, however, this theoretical distinction has lost relevance, as Article 437 is typically applied to events within the factory (affecting workers' health), particularly in the illness-accident subspecies, while Article 434 is used for external events (affecting public health).

Prognostically, it is necessary to assess the existence of a danger to public safety linked to the occurrence of the disaster. Although the second paragraphs of Articles 434

and 437 do not explicitly require danger, doctrine agrees that, given the nature of a disaster, such an element must be evaluated. In any case, as previously noted, the assessment of danger should be based on the *potential presence* of individuals within the disaster's range – an element to be verified in both presumed and concrete danger offenses.

The following pages will highlight interpretative distortions affecting the unnamed disaster provisions, particularly in diagnostic terms. It is worth noting that these distortions have primarily impacted Article 434(2), which has been used to prosecute both *environmental-health disasters* (macroscopic damage to environmental matrices resulting in public safety risks) and *pure health disasters* (collective epidemic phenomena causally linked to conduct), thereby diluting the typical features of common danger offenses through jurisprudential expansion.

Regarding Article 437(2), often invoked in criminal proceedings for intra-company events, the lack of adherence to the principle of legality stems from the analogical use of the concept of "accident" to include "illness-accident." These distortions have not significantly affected the notion of disaster itself, likely because an intra-company environmental-health disaster would be an excessive stretch even for the most creative jurisprudence, and a pure health disaster within a company is difficult to justify when an alternative offense (illness-accident) exists to address such harm.

In fact, jurisprudence tends to apply Article 437(2) to harmful events resulting from the willful omission of safety measures, specifically in the illness-accident subspecies, rather than as a disaster.

4. Environmental crimes as broadly applicable to "Health Disasters"

Other criminal provisions that may be invoked in the context of a "health disaster" are those introduced by **Law No. 68/2015**, which added **Title VI-bis** to the Italian Criminal Code, dedicated to **crimes against the environment.**

4.1. The Offense of Death or Injury as a Consequence of Environmental Pollution

In particular, the offense of *death or injury as a consequence of environmental pollution* under Article 452-ter, and the offense of *environmental disaster* under Article 452-quater, are relevant. The offense under Article 452-ter mirrors the structure of Article 586 of the Criminal Code (*death or injury as a consequence of another crime*). It is therefore evident that cases of death or injury resulting from environmental pollution, now specifically punished under Article 452-ter, were previously subsumable under the general provision of Article 586.

However, upon closer examination, applying Article 452-ter instead of Article 586 may lead to outcomes that contradict the very intent of stricter penalties that motivated the introduction of Article 452-ter. In certain cases, the application of the offense of *death or injury as a consequence of environmental pollution* could result in less severe penalties than those that would be imposed under the offense of *environmental pollution* in conjunction with the crimes of negligent homicide or injury, aggravated under Article 586.

Moreover, it seems unreasonable to markedly differentiate the punitive treatment of fatal or injurious events caused by pollution from that of similar health-damaging events resulting from an environmental disaster, especially since Article 452-ter applies only to the former.

These observations make it difficult to fully grasp the rationale behind the introduction of Article 452-ter, which appears to reflect a legislative attempt to provide a strong response to serious harm to human health caused by pollutants – an issue that rightly alarms public opinion. Notably, Law No. 68/2015, which introduced "eco-crimes" into the Criminal Code, was enacted just over a month after the Supreme Court's ruling in the *Eternit* case, which had stirred significant public discontent.

In any case, it remains to be seen whether, in practice, Article 452-ter effectively achieves the goal of enhanced protection for the legal interests at stake, as intended by the legislature. The offense under Article 452-ter is structured as a multi-offensive crime, aimed at protecting both the environment and individual safety.

Thus, similarly to what occurs in cases of homicide and personal injury, the establishment of the offense under **Article 452-ter of the Italian Criminal Code** also requires *ex post* proof of the causal link between the polluting conduct punished under **Article 452-bis** (attributable to specific individuals) and the individual deaths or injuries suffered by equally identifiable persons. This means that causality would be proven only in the (rather rare) cases where there is a clear and demonstrable etiological connection between the events: on one side, the polluting conduct; on the other, the deaths or personal injuries.

From this initial observation, it becomes evident that the decision to introduce an offense based on harmful events affecting individual safety – intended to protect victims of environmentally damaging phenomena – may prove ineffective in practice. Indeed, the offense of *death or injury as a consequence of environmental pollution* appears destined to encounter procedural challenges that have long hindered the use of so-called "event-based" criminal law as a viable tool for addressing harm linked to technological development and industrial activity.

A telling example of the difficulty in applying this punitive model – particularly regarding causal proof – is found in asbestos-related illnesses, often resulting from a series of cumulative exposures over time, whose health consequences remain scientifically uncertain. In an effort to ensure prosecution of such phenomena, even when not fully understood scientifically, jurisprudence has gradually adapted (or rather, "flexibilized") the standards for attributing criminal liability, extending imputability beyond the traditional *conditio sine qua non* threshold.

In toxic exposure cases, two main interpretative trends have emerged:

On one hand, the need to ensure practical effectiveness of offenses protecting life and health (e.g., homicide and personal injury) has led courts to replace the conditional causality model with *general causality*, or the mere suitability of certain harmful substances to produce a given outcome – based on the "increased risk" criterion.

On the other hand, faced with the difficulty of applying personal injury offenses amid scientific uncertainty, public prosecutors have turned to alternative and anticipatory forms of criminal protection, notably offenses against public safety.

The jurisprudential experience in toxic cases highlights the extreme difficulty of applying event-based offenses when the specific mechanism leading to harm remains scientifically unknown. Given the similar uncertainties surrounding health and environmental damage linked to industrial activity, this jurisprudential background should have been more carefully considered during the drafting of Article 452-ter.

To avoid what seems to be the inevitable disuse of this provision, some scholars have proposed using epidemiological tools to establish a causal link between environmental pollution and harmful outcomes. Assuming that epidemiology can determine the exact number of injuries that would not have occurred without exposure to a specific substance (the so-called *attributable number*), this theory argues that identifying the victims by name is not essential. According to this view, if reliable epidemiological studies are used, the defendant should be held accountable for the total number of injuries caused by their polluting conduct, even if the individual victims cannot be identified.

However, it is difficult to imagine that the offense under Article 452-ter – designed to protect individual life and health – could rely on the epidemiological concept of the *attributable number* to prove the causal link between environmental pollution and personal harm. In cases involving personal injury, the attributable number merely indicates that a certain number of people likely would not have become ill without exposure, but it does not allow for distinguishing those individuals from others who became ill or died due to unrelated causes (*alternative causal pathways*).

In essence, epidemiological evidence can support the establishment of *general causality* (as recognized in the *Franzese* ruling by the Supreme Court), but it clearly cannot support *individual causality*, which must be proven case by case. Specifically, regarding Article 452-ter, the use of epidemiological evidence faces multiple obstacles.

The offense of *death or injury as a consequence of environmental pollution* provides a graduated scale of penalties based on the severity of the consequences: from **two years and six months to seven years** for personal injury (with prognosis over twenty days); from **three to eight years** for serious injury; from **four to nine years** for very serious injury; from fi**ve to ten years** in the event of death and, in this case, the penalties are further increased when multiple deaths or injuries occur.

However, the inability of epidemiology to identify individual victims of pollution makes it impossible to determine the specific severity of each injury. If only the number of affected individuals is known, it is not possible to distinguish between those who suffered minor injuries and those who suffered serious or fatal harm. This limitation prevents the penalty from being calibrated to the actual harm inflicted, effectively nullifying much of the statutory framework.

Moreover, knowing only the number of victims – without their individual causal histories – makes it impossible to assign specific pathological or fatal outcomes to a particular perpetrator. This not only conflicts with the principle of personal criminal responsibility, but also prevents the imposition of proportionate penalties based on the actual number of victims caused by each individual act. For the same reasons, it would also be impossible to award compensation to the victims (or their families), since their identities would remain unverified.

Ultimately, returning to the rationale behind this provision, it does not appear that Article 452-ter introduces any meaningful innovation compared to the existing framework under Articles 586, 589, and 590 of the Criminal Code. Rather, it seems to result in a largely redundant duplication of protections for individual safety.

4.2. The crime of environmental disaster

The offense of *environmental disaster*, as defined under **Article 452-quater of the Italian Criminal Code**, punishes with imprisonment from five to fifteen years "anyone who unlawfully causes an environmental disaster." Paragraph 2 of Article 452-quater outlines three alternative definitions of environmental disaster: the first two are structured as offenses involving harm to environmental matrices (specifically, the balance of an ecosystem), while the third refers to an "offense against public safety due to the significance of the event in terms of the extent of the damage or its harmful effects, or the number of people harmed or exposed to danger.

This is a crime requiring **general intent** (*dolo generico*): its commission requires both awareness and will to cause one of the three events described in paragraph 1, along with the conscious and voluntary decision to act unlawfully – that is, in violation of the regulations governing productive activities.

The new offense under Article 452-quater, and more specifically the formulation in point 3, clearly reflects the legislator's 2015 attempt to codify the jurisprudential notion of environmental disaster that had emerged under **Articles 434 and 449**, beginning with the landmark *Porto Marghera Petrochemical* case.

Over the past two decades, Italian jurisprudence has sought to fill the legislative gap regarding environmental disasters by subsuming all environmentally harmful events under the open-ended clause "other disaster" in **Article 434** (the so-called *unnamed disaster*). Article 434 ("collapse of buildings or other intentional disasters") – and particularly its general clause – has been invoked to criminally prosecute long-term environmental contamination involving substances hazardous to public health, which were considered socially alarming but lacked specific criminal provisions.

However, upon closer examination, environmental harm affecting public safety is not entirely comparable to the types of disasters the legislator intended to punish under the category of *common danger offenses through violence*, which includes Article 434. A systematic analysis of the named disaster offenses under Title VI of the Criminal Code reveals a consistent reference to the **violent cause** of the disaster, the **scale or mode of damage**, and the requirement that the danger b**e immediate and simultaneous.**

Thus, the "disaster" as codified in the Criminal Code appears to be limited to large-scale events that occur suddenly and within a confined timeframe, with immediate destructive impact.

A different view was adopted by the Supreme Court in its ruling on the *Porto Marghera Petrochemical* case, where it stated:

"The offense of negligent unnamed disaster under Articles 434 and 449 is constituted by a 'macro-event,' which includes not only immediately evident disastrous events (collapse, shipwreck, derailment, etc.) occurring within a short timeframe, but also those not immediately perceptible, which may unfold over a prolonged period and nonetheless result in a compromise of safety, public health, and other values of the individual and the community, thereby establishing a violation of public safety."

This ruling exemplifies a jurisprudential trend that has contributed to **flexibilizing the structure of Article 434**, in an effort to encompass increasingly widespread phenomena of harm to collective life and health – often stemming from industrial production.

This substantial judicial "rewriting" of Article 434 of the Criminal Code appears so disrespectful of the principle of legality that it does not seem exaggerated to classify it

as a true analogical extension *in malam partem* of the statutory provision. The interpretative development regarding the (ab)use of the offense punished under Article 434 of the Criminal Code to prosecute environmental damage phenomena with harmful consequences for human health has also involved the Constitutional Court, which, shortly after the publication of the Court of Cassation's ruling in the Petrochemical case, was called upon to assess the compatibility of the formulation of Article 434 of the Criminal Code – specifically the part punishing the so-called unnamed disaster – with Articles 24, 25(2), and 27 of the Constitution.

The formulation of the new Article 452-quater of the Criminal Code, especially in its third hypothesis of disaster aimed at the "integrated" protection of the environment and public safety, is not immediately intelligible. The first interpretative doubts arise from the introductory reservation clause "outside the cases provided for by Article 434 of the Criminal Code." Various interpretative proposals have been sketched regarding the meaning (and even the appropriateness) of this clause. According to one hypothesis, the clause should refer to cases where the concrete act may fall under both the so-called "unnamed" disaster under Article 434 and the new "environmental disaster" under Article 452-quater. The clause would thus serve to ensure the prevailing application of Article 434, while the new offense would apply only when it is not possible to resort to the provision of Article 434.

However, this would relegate the new offense to a merely subsidiary role, applicable only when the elements of the unnamed disaster are not present, thereby nullifying the legislator's intent to separate environmental disaster from the unnamed disaster under Article 434, which would continue to apply even in environmental matters. It seems more reasonable to argue that the opening of Article 452-quater is intended merely to emphasize the distinction from the provision of Article 434, in order to avoid a partial *abolitio criminis* regarding serious environmental contamination not covered by Article 452-quater.

Through the inclusion of this clause, the legislator likely intended to safeguard ongoing proceedings for unnamed disaster, even when they concern facts not falling within the scope of the new offense of "environmental disaster." The clause at the beginning of Article 452-quater is not the only obscure normative element. Further interpretative concerns arise from the formulation of the so-called "environmental-health disaster," under point 3 of the provision.

From a first perspective, it should be noted that the offense centered on "harm to public safety" lacks textual references to environmental protection, unlike the conduct described in points 1 and 2 of the same article, which are based on "ecosystem alteration." Based on this observation, one may wonder whether the offense under point 3 can be

integrated solely by the presence of a danger to public safety, even regardless of the actual compromise of an environmental matrix.

In this regard, the solution proposed by the Court of Cassation seems worthy of endorsement, clarifying that the third definition of environmental disaster must necessarily refer to conduct that in any case affects the environment, with the danger to public safety being a direct consequence. This solution is reached by emphasizing the systematic element of placing point 3 among the various forms of "environmental" disaster, as well as the inclusion of the provision within Title VI-bis, expressly aimed at environmental protection.

Moreover, the provision refers to the "significance of the act due to the extent of the compromise," a term that unequivocally refers to the necessity that the harm to public safety be attributable to an environmental compromise. The formulation of the new "environmental-health disaster" also appears to be poorly respectful of the principle of legality, in terms of the specificity and clarity of the criminal provision, given the vagueness of the concepts of "significance" of the act and "extent" of the compromise. The reference to the "number of persons harmed or exposed to danger" is also imprecise: it seems implied that the provision requires a large number of individuals involved (since the "significance of the act" may depend precisely on the "number" of people affected by the disaster), but it remains to be determined how many "persons harmed or exposed to danger" are necessary to integrate the offense.

The third hypothesis of "environmental disaster" hinges on "harm to public safety," which can be assessed based on two indicators: the "extent of the compromise or its harmful effects" on one hand, and the "number of persons harmed or exposed to danger" on the other. In particular, the meaning to be attributed to the term "harm" raises concerns, as it potentially encompasses both the danger and the actual injury to the protected legal interest, while "public safety" – as a collective legal interest with indeterminate subjectivity – is traditionally considered offendable only in the form of common danger.

Due to its ambiguity, the normative provision of Article 452-quater lends itself to multiple interpretations. On one hand, the need for a precise valorization of the normative data in Article 452-quarter requires careful consideration of the scope of the term "harm," without stripping it of its criminal law meaning. As is known, harm to a legal interest can take the form of either injury or endangerment, and these different degrees of aggression to the protected legal interest are reflected in specific incrimination techniques, allowing the legislator to configure offenses as either result-based or risk-based.

Indeed, from the reading of the phrase "number of persons harmed or exposed to danger" – which contrasts the concepts of harm and exposure to danger of public safety

– it seems that the two terms were intended to have distinct and autonomous meanings (respectively, injury and endangerment of the protected interest).

In this sense, Article 452-quater, paragraph 3 of the Criminal Code would seem to transcend the doctrinal assumption that harm to public safety can only take the form of endangerment involving an indeterminate multitude of individuals, thereby typifying a more advanced stage of disaster. Its offensive scope no longer halts at the threshold of common danger but expands to encompass multiple injurious events, to be evaluated within the collective dimension intrinsic to the legal interest of public safety.

Borrowing the terminology coined by Donini, one might say that the provision alternatively contemplates a risk event or a "collective harm event" to public safety, characterized by excess morbidity and/or mortality within a specific population. However, interpreting the "environmental-health disaster" in Article 452-quater(3) of the Criminal Code as typifying a collective harm event opens the door to a crucial and unresolved objection concerning the **penal sanctioning framework** of the offense, which is classified as intentional.

Indeed, if one admits that the intentional causation of multiple harmful events to health and life falls within the scope of Article 452-quater(3), it becomes difficult to explain the provision of a sentencing range whose maximum is identical to that of Article 589, final paragraph (which punishes multiple cases of manslaughter), and even lower than that of Article 452-ter, paragraph 2 (which punishes intentional pollution that has resulted – through negligence – in death or injury to multiple persons).

The penalty framework for this provision thus unequivocally suggests that, with the new "environmental-health disaster," the legislator did not intend to move away from the traditional paradigm of disaster as a "common danger through violence" under Chapter I, Title VI of the Criminal Code, which does not include deaths or injuries among the constituent elements of the offense.

Ultimately, in light of the above and despite the ambiguous language of Article 452-quarter (3), the conclusion appears inevitable: the offense is intended to punish situations of environmental contamination that entail a **mere danger** to the safety of a **significant number of individuals**. Consequently, in the presence of fatal or injurious outcomes resulting from an environmental disaster, the relevant offenses of homicide or personal injury (either intentional, or negligent under Article 586 of the Criminal Code) would apply **in concurrence with** Article 452-quater.

5. The need for a reform aimed at introducing an autonomous "health disaster" offense.

The concept of an "environmental-health disaster," not being explicitly provided for by Italian legislation, has been variously subsumed under Article 434 of the Criminal Code or Article 452-quater of the Criminal Code. In such cases, the legal constructs have been "distorted" from a diagnostic standpoint, altering the terms of the causal relationship (disaster = harm to public safety or environmental damage resulting from serial and prolonged emissions). The notion of a pure health disaster, however, is absent from the Italian legal system, despite its prognostic dimension, which requires a link between excess mortality and danger – two elements that, in this context, are "complementary."

With regard to Article 437 of the Criminal Code, a provision invoked in relation to intra-company incidents, the failure to comply with the principle of legal specificity stems from the expansion of the concept of injury, to the point of encompassing the so-called "illness-injury." Distortions have affected the notion of disaster enshrined therein to a lesser extent, since in the presence of harmful events, the prosecution of a pure health disaster appears less justifiable when an alternative (namely, injury) is available. Nonetheless, according to case law, the application of Article 437 "as injury" or "as disaster" depends on the prosecutor's decision to unify or separate the individual events. From a criminalization perspective, the legislative intervention has proven far from conclusive: through a provision reflecting a "shadowy" model of legal specificity, the contours of the environmental-health disaster remain elusive and likely to generate future interpretative distortions. Moreover, in the absence of provisions aimed at recognizing widespread danger detached from an instantaneous material referent, the prosecution of disasters not involving environmental matrices will likely continue to fall within the scope of Articles 434 and 437 of the Criminal Code.

In light of these issues – stemming from the need to address "health disasters" despite the absence of an ad hoc provision – several initiatives have been launched by the Justice Committee of the Chamber of Deputies. These aim to reorganize the entire system of rules concerning food safety and public health protection, and to introduce an innovative criminal offense of health disaster.

The offense of "health disaster" should be characterized by two requirements: serious injury to three or more individuals, on the one hand; and widespread danger, on the other.

The proposed criminal offense of *health disaster* emerges from the need to address serious harm to public health caused by widespread exposure to harmful substances,

especially in cases where individual causality is difficult to prove. Italian legislation currently lacks a specific provision for this type of offense, leading prosecutors to rely on Articles 434 and 437 of the Criminal Code, often distorting their original scope.

The reform project led by the Caselli Commission in 2015 aimed to fill this gap by introducing Article 445-bis, which would criminalize situations where serious injury or death affects three or more individuals, and where a broader danger to public health is present. The innovative aspect of this proposal lies in the central role assigned to epidemiological evidence: rather than requiring identification of individual victims, the offense would be based on statistical and scientific data demonstrating excess mortality or morbidity within exposed populations.

This approach allows the legal system to recognize collective harm and diffuse danger as sufficient grounds for criminal liability, even when traditional proof of individual causation is unavailable. The offense would thus be classified among crimes of common danger, shifting the focus from personal injury to public health protection.

The Commission emphasized that such a provision would be particularly relevant in cases involving long-term exposure to prohibited substances – such as industrial pollutants or contaminated food – where the effects manifest years later. The presence of a few proven cases of injury or death would serve as indicators of a much broader and latent threat.

While technically complex, the reform represents a significant step toward modernizing the legal framework for food safety and public health. It reflects a shift in criminal policy toward recognizing epidemiological harm and collective risk, aligning legal protection with contemporary scientific understanding and international recommendations.

It is necessary to briefly turn our attention to the material referent of the disaster (the death or injury of a certain number of individuals). As stated in the guidelines, the event of collective harm would not constitute a typical element of the criminal offense, but rather a mere indicator of the disastrous nature of the event: a contextualizing element which, as such, would not affect the sentencing framework. This project culminated in **Bill No. 283 of 2020**, which, as noted, essentially reprises the contents of a previous legislative proposal that had incorporated the **Caselli Project**.

The merit of the proposal can be appreciated from two perspectives. First, the offense of *health disaster* allows for the valorization of both types of data offered by epidemiological science: the **excess rate,** serving a diagnostic function (injury or death of three or more individuals as an indicator of disaster), and the **attributable risk,** serving a prognostic function (danger). In other words, epidemiological data could be used to

identify two events – one of harm, the other of danger – both stemming from the same conduct.

Second, by codifying a concept of *collective harm*, the proposal avoids criticisms that insist on the need to prove individual causality for each specific case of death or injury. As recently emphasized, if one wishes to assign to this event of collective harm the role of a mere "indicator of disastrousness" – that is, an indicator qualifying the nature of the event as disastrous, and not a typical element of the offense since it does not affect the sentencing framework – then the current wording of the law does not make this reasoning sufficiently explicit. On the contrary, it seems to suggest the existence of two typical events.

To clarify the role of this collective harm event, one proposed reformulation of the offense reads as follows: *"When, as a result of the acts described in Articles 440, 440-bis, 440-ter, 440-quater, 441, 443, and 445, a health disaster is caused through negligence, the penalty of imprisonment shall apply... / For the purposes of this article, a health disaster shall be defined as having caused a concrete danger to public health characterized by particular severity and diffusiveness due to the number of individuals actually exposed, and in any case, in the presence of harmful events affecting life or serious harmful events affecting the health of a plurality of individuals."*

This formulation highlights the **common danger** while also clarifying the role of **collective harm.** An additional clarifying contribution could consist in explicitly stating the method of assessing collective harm through the use of **epidemiological laws.**

These reform proposals and the doctrinal reflections that support them provide an opportunity to assess whether similar solutions could be applied beyond agro-food offenses, particularly in cases of exposure to hazardous substances resulting from industrial activities – especially in relation to **workplace health disasters** or **environmental-health disasters.** In this regard, one cannot overlook the precedent set by the novel figure of *environmental-health disaster*, introduced in **Article 452-quater of the Penal Code** by the 2015 reform, which some believe has codified the equally novel concept of *collective harm*.

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