



DUTCH
SAFETY BOARD

Summary

Industry and local residents



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Photos on the cover and in the report: Mladen Pikulić.

The photo on the front cover is of Rozenburg in South Holland. There is no relation between this area and the report.

The Dutch Safety Board

When accidents or disasters happen, the Dutch Safety Board investigates how it was possible for these to occur, with the aim of learning lessons for the future and, ultimately, improving safety in the Netherlands. The Safety Board is independent and is free to decide which incidents to investigate. In particular, it focuses on situations in which people's personal safety is dependent on third parties, such as the government or companies. In certain cases the Board is under an obligation to carry out an investigation. Its investigations do not address issues of blame or liability.

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N.B: The full report is published in the Dutch language. This summary contains English translations of the most relevant parts. If there is a difference in interpretation between the Dutch and English versions, the Dutch text will prevail.

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Industrial companies manufacture a whole range of products for the local and global market. Often, such production activities are accompanied by emissions of harmful substances. Those emissions contribute, together with emissions from other sources (such as the various types of traffic and wood burning), to the total concentration of harmful substances to which residents living close to such companies are exposed (immission). At various locations across the Netherlands, there is social unrest about the emissions from companies and the health risks for local residents in the vicinity of these companies. In 2021, the Dutch Safety Board decided to launch an investigation into the protection of local residents against prolonged exposure to emissions from companies.

Local residents in the vicinity of industrial companies are dependent on industry and government for the protection of their health against exposure to harmful substances as a consequence of emissions. This raises the question how the current system of regulation and control of emissions protects the health of local residents. The Dutch Safety Board investigated that for both the system design and its operation in practice. In conducting its investigation, the Safety Board considered three cases where there was unrest among local residents, but which differ clearly in terms of the type of industry and regulations involved. The investigation focused on the situations surrounding Tata Steel (IJmuiden), Chemours (Dordrecht) and APN (Nijmegen).

The main question in this investigation is: **How are local residents protected against negative health effects due to prolonged and/or repeated exposure to industrial emissions and is there room for improving the protection offered?**

Only the companies themselves have a direct influence over their contribution to the exposure of local residents to harmful substances. After all, they are in control of their industrial activities and the related emissions. They are only allowed to carry out those activities if they are in possession of a permit. In the Netherlands, the environmental agencies are responsible for the issuing of permits as well as supervision and any necessary enforcement (Dutch: the VTH process) for industrial companies. They conduct this process on behalf of the competent authority, which in most cases is the municipality or the province.¹ The permit application is submitted to the province or the municipality.

In evaluating a permit application and subsequently drawing up a permit, the permit issuer is required to take account of various aspects. First that the company is required to reduce the concentrations of its emissions to the levels agreed in Europe (equivalent to applying what are known as the Best Available Techniques - BAT). This is not always sufficient to ensure that the concentrations of harmful substances in the vicinity of the

¹ For large companies like Tata Steel and Chemours, the province is the competent authority while for smaller companies like APN, the competent authority is the municipality.

factory remain below the safe limits for health and the environment. Of more importance to the protection of local residents, as second aspect, is therefore whether the concentrations of harmful substances in the vicinity of the factory do not exceed the limit for prolonged exposure.² This assessment can take into account all relevant activities, including those subject to the permit application, and third-party emissions. Assessing whether the concentration of harmful substances for humans in the vicinity (immission) meets the limit value, and on that basis where necessary restricting emissions, receives less attention in the issuing of permits and enforcement than the application of the BAT. A third aspect concerns a check on completeness and correctness by the permit issuer to ensure that the permit ties in with actual implementation. Following issuing, the permit must be regularly checked.

In none of the three investigated cases are recent reports available which demonstrate the exceeding of the standards in air, water or soil for the *long-term protection* of local residents. Nonetheless, reports about above-average numbers of cases of illness, emission limit violations and legal proceedings about permit regulations have led to unrest among local residents. The company and/or the government often responded to that unrest by stating 'that emissions are in compliance with the permit'.

In the case of Tata Steel, for a long time, neither the province nor the environmental agency paid attention to signals from local residents that the execution of the VTH process could be improved regarding protection of their health. The management was mostly aimed at ensuring the correct procedural execution of the VTH process and not at protecting the health of local residents. Until recently, the company simply assumed that the health of local residents was sufficiently safeguarded, as long as its activities complied with the permit. Persistent concerns among local residents eventually led to a series of investigations. When these investigations revealed previously unrecognized health risks, this led to the first step in a change of attitude on the part of the environmental agency and the province.

At Chemours in Dordrecht, it turns out that historical emissions of persistent³ substances such as PFOA⁴ can still cause health risks. Here, too, risks emerged following social unrest, on this occasion in response to reports in the media. The consumption of self-caught fish and self-grown vegetables close to the factory has been advised against, since that time, for health reasons. That the environmental agency was unaware of the long-term risks of PFOA can be explained by the fact that the VTH system is focused only on substances that are emitted at the current time. When reports in the media revealed that PFOA represented a higher risk than previously thought, the government and the company ensured that the emission of the replacement substance HFPO-DA was considerably reduced, compared to the initially permitted level.

2 Such standards only exist for Substances of Very High Concern (SVHC) and a number of commonly occurring harmful substances such as particulate matter.

3 Persistent substances are substances which degrade little or not at all in the environment and in the human body.

4 Perfluorooctanoic acid. DuPont, the predecessor to Chemours, halted the use and emission of this substance in Dordrecht, in 2012.

In Nijmegen, the municipality had no overview of emissions from asphalt factory APN and from other companies in the TPN-West industrial site. This was the consequence of the way in which the environmental agency was managed. Here, just as with Tata Steel, the emphasis was on the VTH process itself. This was not in line with the expectations of local residents, for whom the protection of their health was their first priority. In 2021, an indicative chimney measurement at APN revealed an emission of PAHs⁵ that exceeded the stricter limit introduced in 2016. Up to that moment, neither the company nor the environmental agency were aware of the emission. Up to that moment, the company was also not aware of the stricter limit. The measurement also led to the discovery of a contradiction in national regulations concerning asphalt plants. The company subsequently altered its operating method, the ministry revised the rule and the municipality is currently reconsidering the way in which the environmental agency is managed.

In practice, the execution of the VTH tasks by the environmental agencies differs, between the three cases. A great deal is expected of the permit issuers, the supervisors and the enforcers; their work is complex. Sound execution is no easy task and among others requires sufficient expertise and capacity. Local residents have a perception of the quality of risk management by the company and the environmental services based on incident handling and responses to questions or concerns. If that perception is negative, they expect their government to take action. If such action is not forthcoming, they stand up for their own interests, by taking political or legal action. The cases show that without actions by local residents, there is little or no incentive to ensure enforcement, and to achieve emission reductions.

Knowledge about the effects of substances on health is constantly evolving and is never complete. A lack of evidence of the harmfulness of a given substance is not by definition a proof of safety. This demands investigation and best efforts from companies concerning the safety of local residents. To ensure that the health of local residents is protected, it is essential that governments and companies reassess their understanding of the risks of emissions, at regular intervals. The current system offers this possibility but lacks incentive to ensure it is executed. As a consequence, in the cases investigated, this reassessment only took place in response to pressure from society.

Based on its findings, the Dutch Safety Board concludes that it cannot be automatically assumed that the health of local residents is sufficiently protected, given the way in which the system is implemented in practice. The Safety Board has formulated a number of recommendations to improve the protection of health of local residents.

5 Polycyclic Aromatic Hydrocarbons, a group of substances including naphthalene.

Living with industry

People and industry cannot survive without each other: industry offers jobs and provides asphalted roads, packaging and electronics. We can no longer imagine a life without industry. At the same time, over the past few years, concerns have grown about living with industry. As a result of increased awareness and knowledge development, we have come to know more about the potential harmful consequences of industrial emissions for the health of local residents and the environment. In a densely populated country like the Netherlands, it is a given that industry is located close to cities and villages. This results in an additional responsibility both for industrial companies and for government. They must ensure that local residents are protected against the (long-term) health risks of industrial emissions. Local residents must be able to trust that this protection is provided. Reason for this investigation is the fact that for decades, local residents have been expressing concerns about harm to their health as a result of industrial emissions. This investigation focuses on the question how local residents are protected against the health risks of industrial emissions and what room there is for improving that protection. To answer that question, the Dutch Safety Board investigated three cases: steel manufacturer Tata Steel, plastics manufacturer Chemours, and the asphalt manufacturer APN.

The Dutch Safety Board notes that there is room for improving the implementation of the VTH system. This ties in with other national investigations into the VTH system. The current system of setting limits, issuing permits, supervision and enforcement offers more possibilities for protecting the health of local residents against harmful industrial emissions than are actually utilized. In regulating emissions, companies and government authorities often focus on the techniques that must be employed, and their economic viability. As a consequence, less attention is focused on exposure of humans in the vicinity. In fact, specifically that exposure is relevant to the health of local residents. Within the permit system, neither companies nor government authorities are encouraged to continue to develop their knowledge of the risks of substances and to proactively apply that knowledge. Both companies and government authorities adopt a reactive attitude to the protection of local residents. Government authorities for example are insufficiently critical of the consequences of exposure to harmful substances. As a result, possibilities for issuing stricter permits or the intermediate introduction of stricter permit requirements are not taken up or at least not immediately. This lack of ambition and absence of critical attitude on the part of the government contributes to a less than proactive attitude on the part of companies. The cases investigated reveal that environmental agencies tackle specific emissions only following negative publicity and public commotion. This in turn feeds a feeling of unsafety and of mistrust among local residents towards companies and government. The fact that companies and government in practice fail to make use of the possibilities open to them to protect the health of local residents means that those local residents themselves are forced to lobby for the

protection of their own health. The reactive attitude on the part of companies and government is diametrically opposed to the proactive attitude of local residents, resulting in constant friction. To better protect the health of local residents, it is essential that lessons be learned in three areas. The Safety Board expects that this will also improve the relationship between local residents, government and companies. First, local residents must be confident that both government and companies feel responsible, and are working to ensure a healthy living environment. Also, the possibilities within the system of setting limits, issuing permits, supervision and enforcement must be better utilized. Finally, both the development and application of knowledge must be encouraged. These three areas for attention are further elaborated below.

Understandable mistrust among local residents

The investigation reveals that local residents of the three industrial companies investigated feel unheard and not taken seriously. They have a sense that neither the party causing the possibly harmful emissions – the company – nor the party responsible for setting limits for emissions and supervising compliance – the government – is acting on their behalf. The way in which both companies and government react foster this mistrust among local residents. Individual complaints and concerns from local residents, violations of permitted emission levels and study results about negative health effects can count on a technical and procedural response, in which local residents do not recognize their concerns. In many cases, the response states that the emission complies with the permit and is in accordance with the Best Available Techniques, sometimes supplemented by the drawing up of an action plan, the commissioning of an investigation or an exchange of letters between various government bodies. A recurring pattern in the response is that the responsibilities are passed on and that no mention is made of managing particular health risks. Real change only takes place following external pressure from local residents or the media. This is the cause of the mistrust among local residents.

There is no easy way to untangle this kind of spiral of mistrust and resistance. To re-establish trust, and to reduce the necessity of relying on the willingness of local residents to take action, it is important that companies and government demonstrate how they are proactively working to protect the health of local residents before, during and following the issuing of the relevant permits. Visibly acting on the complaints and concerns of local residents is just the first step. As long as companies and government themselves fail to explain and discuss the specific health risks, good intentions and efforts to improve the situation will not reduce the levels of resistance.

Stricter limits, stricter issuing of permits and stricter updating are all necessary

The system of limit setting, issuing of permits, supervision and enforcement should provide local residents with the confidence that companies will stick to the rules, and that government will supervise compliance, including a regular and thorough assessment of the protection of their health. The investigation reveals that in practice both companies and the concerned government bodies in many cases adopt a procedural approach, in which they fail to fully make use of the possibilities available within the system for protecting the health of local residents. The Dutch Safety Board notes that this attitude on the part of both companies and government is insufficient, and relates this shortcoming to four interrelated aspects of (the application of) the system.

Firstly, the claim that the application of the Best Available Techniques for emission reduction is sufficient to protect local residents. The idea behind the application of Best Available Techniques is that the emission of harmful substances is reduced as far as economically reasonable. This is not always sufficient to ensure that the concentrations of harmful substances in the vicinity of the factory remain below the limits applicable for the environment and health.

Secondly, these emissions that remain following the technical intervention are seen as safe, unless they are demonstrated to be unsafe, by immission assessment. The investigated cases show that immission assessment is sometimes not carried out. As a consequence, situations can arise in which the emission of certain substances is permitted and therefore allowed, without insight into how the exposure relates to harmful concentrations. This is particularly relevant in respect of substances which only degrade after a long period of time, if at all: the exposure of local residents and hence the risks they may face continue long after the emissions have been halted.

A third point is that when an emission is permitted including an immission assessment, there are no unacceptable risks for local residents according to the information available at that time. If it turns out later that a substance is more hazardous than previously thought, then this can be repaired by further restricting the permitted emission. This requires that environmental agencies are alert to indications that a substance is more harmful than thought, and that in that case they adopt a proactive attitude and make use of the possibilities for restricting the emission. This proactive attitude is all the more important given the fact that the process of coming to a permit that further restricts emissions is both complicated and has a long lead time, with several opportunities for legal proceedings. Furthermore, the burden of proof lies with the government.

Finally, the economic viability of emission reduction is the starting point for the environmental services when tightening the permit. As a result, when reducing or prohibiting the emission of certain substances, the (im)possibilities for the industry are automatically the central point of focus, instead of the desirable emission reduction from a health point of view.

The investigated cases reveal that the system itself provides no incentives to achieve real change. Often, external pressure in the form of persistent complaints on the part of local residents must be applied in order for action to be taken. Because the possibilities for introducing stricter limits and/or stricter permits often remained unused in practice, local residents cannot automatically be confident that government will ensure and supervise a healthy and safe living environment. For example, the VTH system offers no integrated consideration of the immission of harmful substances. It is essential that the system of limit setting, permit issuing, supervision and enforcement be made more dynamic, taking the impact on health as the trigger for change. In that connection, it is essential that not only emission levels but also immission levels are measured, and that the competent authorities do not only consider whether the measured values comply with the permit, but also whether they comply with the most recent insights into of the health risks of a substance. With a more dynamic system, intermediate intervention with a more limiting permit should become simpler and faster to realize. Also when it comes

to setting limits, the government could adopt a more ambitious attitude, for example by taking the values recommended by the WHO as the starting point, and pleading for this on a European level. Signals from local residents should be taken seriously, while guarding against the risk of local residents being made responsible for identifying risks to their health. That responsibility lies with the companies and government.

Optimizing the development and application of knowledge

The investigated cases reveal that with more knowledge and/or capacity, the environmental agencies and competent authorities have more possibilities for monitoring the protection of the health of local residents. At present, the government is not always able to act as a credible counterweight to companies that operate extensive and complicated processes, such as Tata Steel and Chemours. Also in terms of updating legislation in relation to specific industries, as in the case of APN, knowledge seems to be lacking. This knowledge shortfall on the part of government ties in with a broader trend of decentralization and years of austerity. In practice it means that complicated permit applications must be assessed with relatively limited (human) resources and knowledge, and that subsequently, the supervised companies themselves have access to far more manpower, resources and knowledge. The result is an uneven playing field, in which companies have the upper hand and in which government has made itself dependent on the companies that cause the emissions and have the related commercial interest.

To come to a level playing field, it is essential that government bodies join forces, both at central and local level, as well as invest in knowledge. In this way, the knowledge and expertise that are available, for example at knowledge centres like the National Institute for Public Health and the Environment (RIVM) and universities, can be better utilized. The importance of expanding and sharing knowledge in relation to Substances of Very High Concern within government and attention for capacity and competences has also been pointed out in various other reports. The companies themselves also have a task in terms of knowledge development. The APN case, for example, reveals that there are companies that have almost no understanding of the emissions from their own production process, as a consequence of which they are unable to respond alertly to the possible consequences of a change to that process for the emission of harmful substances. The manufacturing of products in which substances are emitted involves clear responsibilities. First the responsibility that the company has internal access to or in some other way gathers the knowledge necessary for conducting an adequate risk assessment and taking appropriate measures. In the case of smaller industrial complexes, this can be achieved in a sectoral approach. Also, where necessary, companies can proactively share the knowledge they do have, without waiting for requests from the competent authorities. Furthermore, companies should take their social/moral responsibility by contributing to repair any damage that may have been caused as a consequence of previously approved and permitted emissions, if it later emerges that those emissions are harmful to health or the environment.

Making living with industry futureproof

The investigation topic in this case is an incident in slow motion. Substances emitted today, which with today's knowledge are assumed to be safe, may in fact turn out to be harmful to health, in ten years' time. There is a risk that by that time, the harm will already have been done, in particular if the substances in question are persistent. In the process of issuing permits, supervision and enforcement, protecting the health of local residents should be more firmly anchored for both the companies and government. This calls for constant innovation, which must be seen as an obligation that is integral to the right to produce. Companies must constantly invest in the development of knowledge and techniques to protect the health of local residents. For the government, in addition to investing in knowledge development and capacity, improvement can be achieved by developing a good knowledge infrastructure. The current VTH system already offers sufficient possibilities for allocating an important role to protecting the health of local residents, but at present those possibilities are not being fully utilized. This calls for leadership and a proactive attitude on the part of both companies and government. This investigation reveals that this situation differs in each case and for each party, both in terms of the level of proactivity and the amount of responsibility that is felt and carried for protecting the health of local residents. Companies and government must individually and jointly formulate and comply with clear goals for protecting the health of local residents, as is also already the case in terms of economic ambitions. If companies and government visibly invest in improving this protection, and respond proactively, a start can be made on regaining trust.

RECOMMENDATIONS

The investigation exposes the fact that improvements must be achieved in protecting the health of local residents against harmful industrial emissions. There is a tangible mistrust of industry and government, among local residents.

The Dutch Safety Board issues the following recommendations:

To Tata Steel, Chemours and APN:

1. Fully implement the legal obligation and social responsibility of companies to protect the health of local residents against harmful industrial emissions.
 - a. At least ensure a clear understanding of your own production processes and the contribution of your own emissions to exposure levels and health risks of local residents. Invest in investigating and filling knowledge gaps.
 - b. At least ensure a reduction in the exposure of local residents to harmful substances emitted by the company, as soon as increased risks to health are revealed.
 - c. Use the expertise of the company to reduce the exposure of local residents to harmful persistent substances emitted by the company in the past, if increased health risks emerge.

To VNO-NCW

2. Ensure that the above recommendation is brought to the attention of members and sector organizations active in these sectors.

To the provinces of Noord-Holland and Zuid-Holland and the municipality of Nijmegen, as competent authority:

3. Ensure that you are making full use of all possibilities within the current system of rules and regulations to protect the health of local residents against harmful industrial emissions. Where this is not the case, adapt your procedures. At least ensure:
 - a. An understanding of the emissions from companies. Regularly test the emission overview for completeness and correctness.
 - b. An assessment of the health risks per substance to which local residents are exposed. Do this at regular intervals and take uncertainty into account. Ensure that you have the necessary information about exposure and the health effects of substances.
 - c. More restricted permitted emissions when necessary for the health risks for local residents.
 - d. Timely implementation of BATs by companies.
 - e. Exchange of knowledge and experience with other competent authorities and environmental agencies.

To Tata Steel, Chemours and APN, to the provinces of Noord-Holland and Zuid-Holland and the municipality of Nijmegen and to the environmental agencies DCMR, Noordzeekanaalgebied and Regio Nijmegen:

4. Make full use of the system for protecting the health of local residents against harmful industrial emissions. Communicate proactively and be transparent about incidents, concerns and complaints in order to regain the trust of local residents.

To the Minister for the Environment:

5. In collaboration with the Minister of Health, Welfare and Sport and the Minister of the Interior and Kingdom Relations, ensure that competent authorities and environmental agencies are able to fully live up to their responsibility for the process of issuing permits, supervision and enforcement of industrial companies, to better protect the health of local residents. Take into account at least the level of knowledge, the capacity and the feasibility and uniformity of legislation.
6. Encourage the development of knowledge about the health effects and risks of substances emitted by industry and ensure that both government and companies use this knowledge, in order to protect the health of local residents.
7. Ensure that the precautionary principle weighs more heavily in the system of permitting for persistent substances.

To the National Institute for Public Health and the Environment:

8. Together with the Minister of Health, Welfare and Sport, investigate how environmental agencies can have knowledge of the health effects and health risks of substances emitted by industry.

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