Netherlands Labour Authority
Ministry of Social Affairs and Employment

Exposure to hazardous substances at Brzo companies

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Article 1

The employer's move

Exposure to hazardous substances can cause serious health issues. The Netherlands Labour Authority is calling for additional inspections to improve compliance with legislation in that area. Programme managers Renske Hotting and Charlotte Kottier explain how companies can best improve their approach.

'The purpose of our supervision was to give companies a wake-up call and create awareness.'

Over 400 Seveso establishments (Brzo companies) (companies subject to the Major Accidents (Risks) Decree 1999) in the Netherlands were inspected by the Netherlands Labour Authority for the risk of employees being exposed to dangerous substances. The inspections focused on what are known as CMRS substances. These are carcinogenic, mutagenic, reprotoxic and sensitising substances. Exposure to these substances can cause serious long-term illnesses, such as cancer. The reason for these inspections? Previous inspections revealed insufficient compliance in this area.

This targeted monitoring was prompted by signals from inspections and the case concerning the emission of and exposure to the substance perfluorooctanoic acid from chemical company DuPont (now Chemours) in 2016, after the company had previously caused controversy in the United States. That led, among other things, to a European lobby calling for more supervision of work involving hazardous substances. Parliamentary questions were also raised.

'Exposure to hazardous substances became a hot topic,' explain Renske Hotting (hazardous substance exposure programme manager) and Charlotte Kottier (Brzo/ARIE programme manager). 'The purpose of our supervision was to give companies a wake-up call and create awareness. We want to ensure that they are maximally committed to protecting their employees.'

4 steps

To help companies work towards providing better protection, the Netherlands Labour Authority has made the legislation more accessible by explaining it in four steps:

- inventory
- assessment
- measures
- embedding

'What surprised me most during the inspections is that companies do not have a clear view of all the substances,' Renske Hotting says. 'In most cases, this is not deliberate. Companies are usually willing to cooperate. It's more a matter of ingrained work processes.

Also, people's health is not damaged in the short term. The substances are silent assassins: no alarm bells sound. But that is no reason to leave things as they are. Employees are entitled to healthy working conditions for a healthy and enjoyable life even after retirement. That is why exposure to hazardous substances should be a key aspect in the mindset of companies. That is the purpose of our inspections.'

Embedding

However, addressing the issue once is not enough. Awareness of exposure to hazardous substances must be permanently raised and firmly embedded in company policies. The monitoring visits also gave the Netherlands Labour Inspectorate important insights into assurance. Charlotte Kottier: 'It is good employment practice to have your affairs in order in this area. You can achieve this by introducing periodic checks, gathering expertise, making an officer or department responsible for it or, in small companies, by knowing which health and safety expert to turn to.'

'There's no need for companies to reinvent the wheel,' adds Hotting. 'There is so much available in this area, such as a good roadmap in the form of a self-inspection tool, health and safety expertise. The

key principle is that employers comply with the Dutch Working Conditions Act, which means they have mapped out their hazardous substances and taken adequate measures to protect their workers from harmful exposure.

We also recommend that companies set aside sufficient funds for any necessary adjustments that the state of technology calls for to further prevent or even better eliminate exposure. Employees themselves can also be alert and empowered. Be aware of what substances you are working with. You don't have to accept everything. It's about your own health.'

Follow-up inspections

Now that all Brzo companies have been visited, the insights gained so far will be shared in a series of meetings starting at the end of 2023. These insights will be used to follow up the monitoring of exposure to hazardous substances at Brzo companies in 2024.

Want to know more about self-inspections? See www.zelfinspectie.nl/

Article 2

An inspector's view

Robin Langevoort has worked as a Hazardous Substances Exposure Inspector at the Netherlands Labour Authority since 2013. What is his impression of exposure compliance with the Brzo companies he has inspected in recent years? What developments does he see?

'We make sure employers take responsibility.'

Companies do not sufficiently identify hazards. Do you see any improvement?

'In the past, there was often little focus on the issue of exposure, although the health and safety legislation has stipulated for years that you have to assess the nature, degree and duration of exposure to hazardous substances.

In our experience, Brzo companies clearly understand the risks of substances for the primary processes on which their production runs. But ancillary processes, such as technical services, were often not paid sufficient attention at these companies. Technical services, for example, also use aerosols containing hazardous substances, and people may be exposed to welding fumes. Companies often do not yet sufficiently understand the hazards presented by substances. However, we have seen more attention being paid to this in recent years.'

Do companies organise source measures and technical measures?

As an employer, you want to provide the highest possible level of protection from carcinogenic substances. You can tackle it at the source and see if you can replace the hazardous substance with a less harmful one. Or you adapt the process so that little or no harmful substances are released and provide source extraction. You only turn to personal protective equipment, such as respiratory protection, as a last resort. Companies often do this at an earlier stage, without addressing the source.'

How are these companies working to improve?

'Companies use the 4-step model to map their process. That starts with taking stock: the company looks into which agents in products or processes are hazardous and which substances they contain. The exposure level for all hazardous substances employees may be exposed to is then determined. After that, the company takes action and records everything in documentation.

As inspectors, we do not always have to take enforcing action. Many companies recognise the importance of inspections but can be hugely shocked by the results. It is also an awareness-raising process. Work remains to be done for us because the list of CMRS (Carcinogenic, Mutagenic, Reprotoxic and Sensitising Substances) substances grows every year. New, potentially dangerous, substances are emerging. Also, limit values may change as more knowledge develops about adverse effects.'

Has your role as an inspector changed?

'All inspectors place their own emphasis, but CMRS substances are checked in the same way at every company. However, we have paid more attention to source measures in recent years. We also look at how emergency services are organised in companies and whether all protective equipment is available in the workplace.'

What do you find important in your work? And what gives you job satisfaction?

'The impact I see from the measures implemented through the inspections. It's gratifying to return to the company in question and be told by staff that things are much better.

In these companies, the dangers are often not visible to the naked eye, and the consequences often take years to present themselves. People are slowly being exposed to hazardous substances a little bit every year. That makes them a silent assassin. It is therefore important that we intervene in time. That is the beauty of our work: we ensure that employers take responsibility for protecting the health of their employees.'

For more info, see: www.zelfinspectie.nl/

Article 3

Safety: a team effort

To work safely with hazardous substances, you first need to know what you have available. Corbion has identified and assessed more than 1,000 hazardous substances in collaboration with an occupational hygienist.

'The health of your employees is too important to rely on assumptions.'

You can't buy it in the supermarket, but it is in many products: lactic acid, Corbion's main raw material. This natural substance is made from sugar through fermentation. It acts as an antibacterial in hand soap, for example, and preserves foods such as bread and meat. It is also indispensable in making dialysis fluid, dissolvable sutures, and phone chips.

In the production process, especially in its quality and research laboratories, Corbion uses many different substances, explains Manon Baurdoux. 'In the labs, besides doing a lot of research, we do tests to demonstrate that our products are of the right quality. Although we use very little of them, it still involves a lot of different substances.'

Blind spots

To work safely with all these substances, you first need to know what you have available. 'You may feel that you have your act together as a company, but you never know if there are blind spots. Corbion's mindset was good, but the safety and health of your employees is too important to rely on assumptions.'

With so many employees spread across different departments and laboratories, such an inventory is quite a job. First of all, Corbion engaged an occupational hygienist. 'After all, what is both acceptable and workable when you work with so many substances? The occupational hygienist guided us through the latest exposure insights.' Someone was also hired to make an inventory all substances throughout the company and put them into a database. All associated safety data sheets were also collected.

Degree of exposure

The next step was categorisation: into which categories can the hazardous substances be placed? 'For this purpose, we looked at the degree of danger and the type of use. This is also known as 'Control Banding'. We then calculated the level of exposure among our employees. How is a substance used, who by, how often and for how long, indoors or outdoors, in a fume cabinet or not, with or without extraction? This varies not only by substance but often also by the location where we work with it. It is a very complex matter that makes it necessary to call in an expert. For

example, the occupational hygienist helped us tremendously with a simple solution for reducing exposure at sample collection points.'

Broad support

The most important tip for businesses? 'Safety around exposure is a team effort. It should not only be done by the safety department; the management must also support it. Otherwise, it is doomed to failure.' Also: 'Hire a pragmatic occupational hygienist and think carefully about how the inventory is set up at the front end. That avoids the same things being done twice.'

Baurdoux concludes: 'This is a very complex subject for an SME without chemically trained staff. The roadmap on the website of the Netherlands Labour Authority is a start, but it has yet to be firmed up. It would be good if trade associations could prepare concrete guidance and practical tools for their members.'

About Manon

Manon Baurdoux was Cobion's Environment, Health and Safety manager until recently. Now, as project leader of the Global Continuous Improvement team, she works on further rolling out safety measures at international establishments.

Article 4

Working safely with hazardous substances

All companies must protect their workers from exposure to hazardous substances. Given below are some practical examples of companies that have adapted their practices to manage exposure risks.

Using safer paint

What we do

'Among other things, we (Benegas, Putten) place green propane tanks at homes, such as farmhouses, that are not connected to the natural gas network. Such a tank is placed in the customer's grounds for 12 years. After that, we collect it for maintenance and inspection. We empty it, have it sand-blasted and repainted and then re-inspected. After that, the tank goes to a new customer.'

How it went

'The paint used to spray the tanks contained carcinogenic components. Employees were working in a spray booth with respiratory protection. But under the legislation, that paint had to be replaced with a less harmful alternative, such as water-based paint.'

What changed

'We had been looking at alternatives for a while when the Netherlands Labour Authority came to us and set a deadline. That pointed us in the right direction. The question was whether water-based paint could provide the same protection for the tanks. We have had ageing tests performed on the coating. The new paint scored well.'

Results

'We did have some start-up problems: temperature, humidity and tank temperature during spraying have to be very precise for good coating adhesion. But it all went well after that: the new paint turned out just as good as the old one. The employee doing the spraying is happy with it.'

Replacing components

What we do
'We (Zandleven Group, Leeuwarden) are in the 'protective coatings' industry, for protective paint on steel structures. It could be anything: steel construction, bridges, lock gates, traffic gantries with matrix signs, silos, and some off-shore applications.

We mainly supply painters and the occasional maintenance painter.'

How it went
'The products we were using contained the harmful substances ethanol, formaldehyde and quartz. Formaldehyde is a solvent. Ethanol is in thickeners that keep paint from dripping.

Quartz is a filler. We mix that ourselves. We receive it as a fine powder in bags - it looks a bit like pancake mix. But particulate matter is harmful if it gets into your lungs. Our employees work with respiratory protection, and we have an extraction system. Staff are also instructed to dose the powder slowly to stop it getting into the atmosphere.'

What changed
'We have completely replaced the formaldehyde and 90 per cent of the ethanol. We also use a certain type of oil. For one product, the substitution does not yet work. We are still looking for a solution for the quartz. There is a candidate raw material, quartz with a coarser grain distribution. We will start working on that this year.'

Results
'Operationally, not much will change. Replacing ethanol affects the drying time; you have to reformulate the paint. Initially, there was also some resistance from users. A painter is a kind of mini-Rembrandt who wants to produce the best possible result. But that can now be done, and people are still happy that you have replaced a CMR substance with a non-CMR one.'

Closed sampling

What we do
'We (Shell Terminal, Arnhem) have mineral oils delivered here by barge: petrol, diesel, ethanol, biodiesel, some 350 to 400 ships a year.

Those oils are pumped into large storage tanks here with two 400-metre underground pipelines.'

How it went
'Before a ship delivers its cargo, you take a sample to analyse it. That used to be done with open sampling. That entails opening the tank and taking a half-litre sample from it. This always releases a large amount of petrol vapour.

The employees use gas masks, helmets, and goggles, but there is still exposure. And it also gets into the environment.'

What changed
'We started closed sampling in 2007. We use a dopak system, or an insert in the pipe or on the marine tank, which allows you to directly tap a sample for analysis.'

Results
'When we started closed sampling, there was some resistance. People were not used to working this way and had to learn precisely how to do it. But it was gradually accepted, and now everyone likes how it works, and it is in demand. It is not yet required by law, but it is at Shell. During a visit by the Labour Authority, they saw it as an example of how to work more safely.'

Electric forklifts

What we do
'We (Kavegas, Ederveen) are a small company of 16 employees selling propane to market gardeners, farmers, Dutch doughnut stalls, and balloonists.

We supply bottles and tankers from our warehouse with large tanks.'

How it went
'We have two diesel forklifts that we use to transport gas cylinders. They are equipped with propane detectors. If those detect even a sniff, the engine cuts out.'

What changed
'We were told by the inspector from the Netherlands Labour Authority that the diesel forklifts should be replaced because of the exhaust fumes. That involves sizeable investments for a small company.

We tested several forklifts: looking at power, turning circle, dashboard clarity and noise pollution. We also had to work out how to organise charging and where the charging station would be located. We have now bought an electric forklift, with a second one due at the end of November.'

Results
'We like the electric forklift. We understand the need for inspections; safety is in the best interest of us all. But sometimes, as a company, a standard blueprint seems to be imposed on you. I would like to see us talking a bit more to each other.'

Article 5

Getting started: 5 tips

The Netherlands Labour Authority has now inspected almost all Brzo companies in the special project 'Exposure to hazardous substances'. The focus was on employee exposure to hazardous substances rather than process safety, which is more regularly inspected at these companies.

'Almost all these companies have completed the risk assessment steps,' says project leader Elodie Oosterhof. That means that under the Labour Authority's STOP model, the time has come for action. The STOP model is a more concrete elaboration of the Occupational Hygiene Strategy for working with hazardous substances.

'Our common goal is health: preventing illness.'

5 tips for companies getting started with this

Be proactive

'Sometimes you get the impression that companies wait for us to intervene,' Oosterhof says, 'We expect companies to take the initiative themselves." Companies working with many different substances will certainly need to spend a lot of time on this, and additional investments may be needed. 'But these very companies have the experience, knowledge and innovative capacity to take these measures,' says Oosterhof. 'Supervising the handling of hazardous substances is therefore first and foremost a task for companies. We can only monitor this with sample checks. So take responsibility, and take the initiative!'

Make an action plan

Following the risk assessment, make a plan along the lines of the STOP model:

- Substitution
- Technical measures
- Organisational measures
- Personal protective equipment

First check whether hazardous substances can be substituted: replacement with less harmful substances. Oosterhof: 'If that is not possible, the reasons must be properly explained. It is an offence not to justify this in full.'

Substitution is followed by technical measures, such as better shielding or extraction, different working methods or cleaner production techniques. Also, there are often gains to be made in how the work is organised: central control of a process instead of on-site, automation, or rotating work.

Oosterhof: 'The remaining exposure to hazardous substances can be reduced by personal protective equipment, such as masks, gloves, and protective clothing for workers.' But this measure ranks last in the STOP model for good reason: 'Such measures may be appropriate in urgent situations, but they are generally the most stressful for workers and the most difficult to sustain.'

Also generally advisable: common sense measures, such as keeping the workplace tidy, vacuuming instead of sweeping, proper maintenance and properly instructing workers.

Schedule an annual periodic occupational health examination (PAGO)

Employees who work with hazardous substances must be offered an annual Periodic Occupational Health Examination. 'That enables the employee to check with the company doctor whether there is a risk of damage to their health and how it can be mitigated,' Oosterhof says. 'This is mandatory but is not always done.'

Maintain attention

Measures must also be embedded in processes: records must be kept. Oosterhof: 'Production processes change, and so does exposure to hazardous substances.' Scientific knowledge about harmfulness of substances is also growing: limit values change, and new substances appear on the government's list of carcinogenic substances and processes all the time. Oosterhof: 'Dealing with hazardous substances is a continuous process, requiring constant adjustments. The work is never done.'

Use the self-inspection tool

Use the self-inspection tool Working with hazardous substances. This helps to identify, assess, align and embed measures.

This is a publication of:
Netherlands Labour Authority

May 2024