

# DRUGS, INTERNATIONAL CHALLENGES

## ILLEGAL SYNTHETIC DRUG PRODUCTION AND WASTE IN FLANDERS (BELGIUM): TRENDS AND RESPONSES

### SUMMARY

The illegal production of synthetic drugs (e.g. amphetamines, MDMA/ecstasy, methamphetamine) poses significant environmental risks, including soil and water contamination. This analysis focuses on Flanders, Belgium, examining the latest trends in synthetic drug production and the dumping of toxic waste materials generated during drug production. Based on a media analysis of Flemish newspaper articles published between 2020 and 2023, we consider environmental-oriented responses implemented to date and reflect on possible developments in this area. Production of synthetic drugs in Flanders has

become more widespread in recent years, and despite a temporary impact of the COVID-19 pandemic, the market for these drugs has shown sustained resilience. The direct discharge of chemical waste into soil, waterways, and sewage systems presents detection challenges, and has the potential to exacerbate environment harms. A range of environmental-oriented responses have been introduced so far, primarily reactive in nature. Future efforts may benefit from considering more proactive action and drawing lessons from environmental harm reduction practices from other fields.

The European Union (EU) Drug Markets Report estimates that in 2021 the illegal drug market for amphetamines and MDMA in the EU had a minimum retail value of approximately EUR 2.2 billion (EMCDDA and Europol, 2024). Large-scale manufacture of these synthetic drugs takes place in the EU, and is primarily concentrated in the Netherlands and in Belgium (EMCDDA and Europol, 2024; Europol, 2021). Amphetamine, MDMA, and methamphetamine produced in Europe are intended for distribution both within the EU and to markets elsewhere (EMCDDA and Europol, 2024; Europol, 2021). Notably, methamphetamine production has increased in recent years. In 2021 alone, nine medium and large-scale methamphetamine production facilities were identified in Belgium (EMCDDA, 2023).

Illegal synthetic drug production, transport, and consumption generate significant environmental hazards (UNODC, 2022)<sup>1</sup>. A major concern is the toxic waste resulting from the illegal

production of these drugs. It has been estimated that the waste generated could be at least five times the weight of the end-product (EMCDDA and Europol, 2019 ; UNODC, 2022) – though there is still much to learn about the actual composition of this type of waste materials (ter Laak and Emke, 2023). When considering the quantity of waste produced, it is plausible to anticipate a ratio of 5-10 kg of waste for every 1 kg of methamphetamine; 6-10 kg for 1 kg of MDMA; or 20-30 kg for 1 kg of amphetamine (EMCDDA and Europol, 2019; UNODC, 2022). The amount of waste can vary depending on the specific production process applied, the different chemicals used, and whether pre-precursor conversion occurs at the illegal production site. The waste materials tend to be disposed of in environmentally harmful ways, such as being dumped into containers in forests, burned in vehicles, mixed with manure or other industrial waste, or discharged directly into sewage systems, rivers, or soil (UNODC, 2022). The impact of the dumped or discharged materials will vary

1. Responses to illegal drug production and supply can also have a negative environmental impact (for more, see for instance: Del Olmo, 1998 ; South, 2023).

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depending on their chemical properties and the location of the disposal – but they can result in contamination of soil and waterways, among other hazards (UNODC, 2022). Given that about 90 tonnes of amphetamine were consumed in the EU in 2021 (EMCDDA and Europol, 2024), with a substantial portion likely produced in the region, the potential environmental risks are considerable<sup>2</sup>.

In previous research, we focused on the trends and main characteristics of synthetic drug production and the dumping of chemical waste materials in Flanders, Belgium, between 2013-2020. This research was based on an analysis of media coverage and secondary data from the Belgian Federal Police (Pardal *et al.*, 2021). More recently, we have shifted our focus to the stages following the discovery of dump sites. We have mapped the range of stakeholders involved in dismantling these sites and in the environmental remediation and aftercare processes, drawing on qualitative interviews and case file analysis (Colman *et al.*, 2023). In this update, we build on that knowledge to address the latest developments concerning synthetic drug production and dumping in Flanders, as well as the policy responses adopted to mitigate environmental harms. Given the dynamic nature of drug markets and the adaptability of the actors involved, it is important to take stock of the current characteristics of this specific market, especially in a region where illegal synthetic production and waste dumping are prevalent.

## Recent trends and challenges in Flanders' synthetic drug production

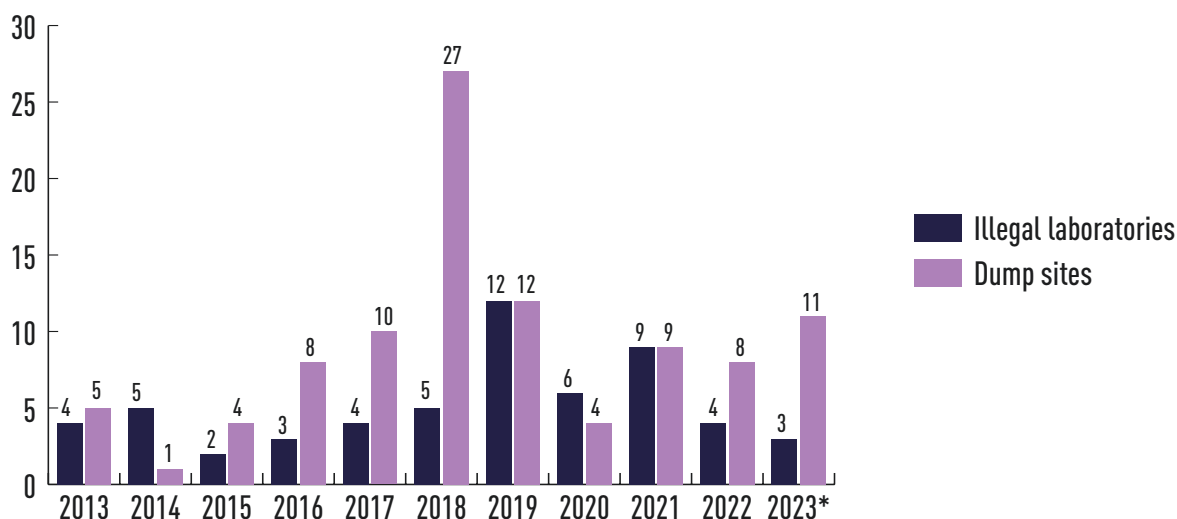
The Flemish media reported on the detection of 22 illegal synthetic drugs laboratories (for amphetamine, MDMA,

methamphetamine) during 2020-2023 – Figure 1. This is an under-representation of the total number of laboratories identified by law enforcement during that time, as not all discovered illegal laboratories or dump sites were reported by the media. Indeed, the Belgian Federal Police indicated that, in 2021 alone, 27 illegal laboratories and 29 dump sites were identified in the country (Personal communication with Federal Police, 2023)<sup>3</sup>. While this media dataset is not comprehensive of all cases during this time, it allows us to delve into the details of the reported incidents to gather insights on synthetic drug production and waste in Flanders.

A significant number of the reported illegal production sites continues to be based in the province of Limburg and/or close to the border with the Netherlands. At the same time there are indications in media reports of a geographical spread during the 2020-2023 period (Figure 2). Police data confirms this expansion across the country: for example, in 2021, three production sites were dismantled in other regions of the country (one laboratory and one dump site in East Flanders and one storage facility in West-Flanders) (Personal communication with Federal Police, 2023). In 2022, police figures indicate an increase in the number of detected synthetic drug production sites in both provinces, with six being detected in East Flanders (two laboratories and four dump sites) and ten in West-Flanders (five laboratories, four dump sites and one storage facility) (Personal communication with Federal Police, 2023). This is also confirmed by a representative from the Limburg Public Prosecutor's office, in a media interview:

*"Labs have recently been popping up in other parts of the country, though Limburg remains the epicentre of production"* (Flemish newspaper Het Belang van Limburg, 17 October 2020, translated)<sup>4</sup>

Figure 1. Media-reported cases of illegal synthetic drug laboratories and dump sites in Flanders (2013-2023)



Source: Own construction based on media dataset analysis.

Note: Data for 2013-September 2020 extracted from Pardal *et al.* (2021). Data for 2020 from current analysis only includes media reports from 1 October onwards. The dataset includes media reports for amphetamines, MDMA, methamphetamine, or general references to synthetic drug production.

\* 2023 only includes media reports published before 1 September 2023.

2. While here we refer only to the potential for direct environmental harms in Europe, a range of (pre-) precursors ultimately used in the production of synthetic drugs are plant-based, and their exploitation may also contribute to negative environmental impacts in other regions (e.g. ephedrine, used in the production of methamphetamine and extracted from the ephedra plant grown in Afghanistan, for example) (EMCDDA *et al.*, 2020 ; Kramer *et al.*, 2009).

3. The media dataset we analysed included newspapers from Flanders only. It is possible that the detection of laboratories or dump sites in other regions of the country might not have received the same level of attention in the articles reviewed.

4. Henceforth we include only the name of the newspaper in direct citations; all media data was published in Flemish newspapers. All citations were translated to English.

The period under analysis (2020-2023) overlapped the COVID-19 pandemic, particularly when Belgium imposed mobility restrictions on citizens. However, illegal synthetic drug production in Flanders may have only been temporarily affected, aligning with trends observed in other areas of the EU drug markets (EMCDDA and Europol, 2024). The Public Prosecutor's Office from Limburg alluded to the resilience of this market in a media interview:

*"The controls on essential travel and monitored border crossings probably made producers more cautious. [...] Organising and transferring between Belgium and the Netherlands was more difficult and probably slowed down their work. This would explain why we had a number of drug labs in the first few months of this year, then it quieted down and more recently we were able to bust several production sites in a short period of time."* (Het Belang van Limburg, 17 October 2020)

Overall, there seems to be a growth in the number of production sites in the country, especially since 2019. The scale and professionalisation of production have also increased in recent years, as confirmed by the National Institute of

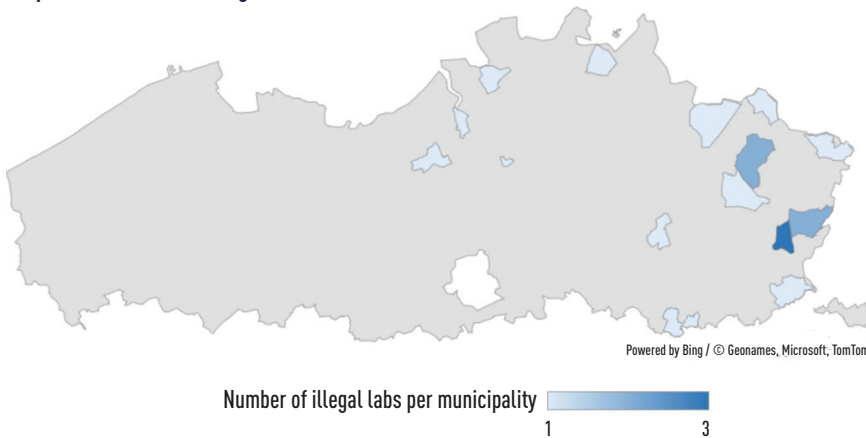
Criminalistics and Criminology (NICC) in a media interview: *"There are actually no small labs anymore"* (De Standaard, 9 February 2022). Production facilities were set up in farms and warehouses, and often found in more remote and harder to detect locations, reflecting more general trends (EMCDDA and Europol, 2023). In addition, garages, vacant and rental houses were also used as sites for synthetic drug production in the period under consideration. Some of these were multiple-drug production sites (EMCDDA, 2023), as in the following case: *"Inside the warehouse, a lab had been set up to produce various types of synthetic drugs, and there was also an installation for extracting cocaine from other substances."* (Gazet van Antwerpen, 5 February 2021).

In line with previous research (Colman et al., 2018 ; EMCDDA and Europol, 2023 ; Europol, 2021), in 2020-2023 the synthetic drug production market in Belgium appears to be connected to Dutch criminal actors and networks: *"Rule of thumb for the Belgian drug investigation: 80% of all the dismantled labs lead to the Dutch underworld"* (De Standaard, 14 January 2023). In the media reporting, it was noted that Dutch actors often provided or facilitated access to infrastructure and facilities for synthetic drugs

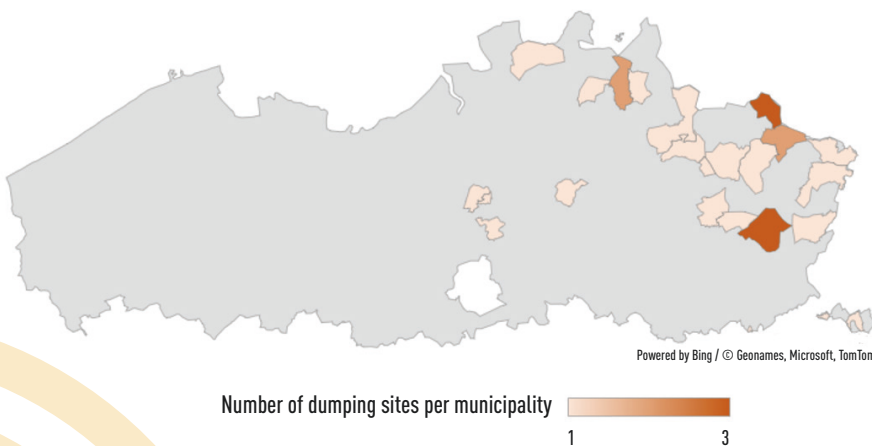
manufacturing. In addition, there were also some suggestions of the involvement of Mexican individuals, particularly due to their knowledge of the production process: *"The contours of a new criminal phenomenon are emerging: 'cooks' are flown in from Mexico to produce crystal meth in labs in Belgium and the Netherlands."* (De Standaard, 14 January 2023). This type of knowledge exchange and collaboration has been previously identified, and primarily associated with large-scale methamphetamine production in the EU as far as synthetic drugs are concerned (EMCDDA and Europol, 2024).

**Figure 2. Media-reported locations of illegal synthetic drug laboratories and dump sites in Flanders (2020-2023)**

**Reported locations of illegal labs (2020-2023\*)**



**Reported locations of dumping sites (2020-2023\*)**



**Source:** Own construction based on media dataset analysis.

Notes: 2020 only includes media reports from 1 October onwards. The media dataset only focused on the Flemish region.

\* 2023 only includes media reports published before 1 September 2023.

**Environmental impact of waste from synthetic drug production in Flanders**

The waste materials from synthetic drug production contain hazardous chemicals and other substances which can contaminate the soil, waterways, and air, generating negative environmental impacts, especially in the areas where dumping of waste is concentrated (UNODC, 2022). Furthermore, illegal production also entails risks for the health and well-being of those involved, the surrounding environment of the site, as well as to the actors called to the scene when the site is detected. For instance, several illegal laboratories were detected in the sequence of fires and other hazards at the manufacturing sites:

*"The fire started around 11:30 am in a hard-to-reach villa [...]. The location was just one factor that made extinguishing the fire*

*difficult. "A synthetic drug lab was found in the house", said Tom De Gent, spokesperson for the North Police Zone. This meant that the fire brigade, who had arrived in large numbers, had to proceed very carefully. (Het Belang van Limburg, 26 November 2021)*

Water contamination and soil pollution are some of the key environmental harms associated with synthetic drug production (Pardal *et al.*, 2021 ; UNODC, 2022). The waste generated throughout the production process has typically been disposed of or discharged at the side of or near roads, in waterways, forest areas, parking lots, vehicles, among other (Pardal *et al.*, 2021). We found multiple examples of the illegal disposal of toxic waste reported in the media that confirm these *modi operandi*, including for instance:

*"Walkers found a large number of blue barrels on a parking lot [...]. In total, there are about 50 barrels filled with chemical products. The waste is suspected to be from a synthetic drug lab. The local police, Limburg Regio Hoofdstad, set up a safety perimeter. The judicial laboratory and staff from the Clan Lab Response Unit arrived at the scene." (De Standaard, 23 January 2023)*

Several dump sites were found close to the border between Belgium and the Netherlands, highlighting again the mobility and interconnectedness of the two markets, and the likely involvement of actors from both countries. Proximity to the border was such that at least on one occasion it was not clear whether the dumping had occurred in Belgian or Dutch territory:

*"[...] about 100 barrels of drug waste were dumped on Friday morning. The barrels were discovered yesterday morning just before seven o'clock in the nature reserve on the border of Achel and the Dutch town of Budel. [...] These likely contained waste from a production site for synthetic drugs. The Dutch police began collecting evidence, but around noon it became apparent that the dumping had occurred on Belgian territory, specifically in Achel. The investigation was then transferred to the HANO police." (Het Belang van Limburg, 24 June 2023)*

But beyond the more visible cases involving the dumping of 'blue barrels', which are relatively easier to detect for passersby or law enforcement agents, we found repeated concerns about the amount of chemical waste which may be directly discharged onto soil or water. A local policymaker explained the difference as follows:

*"In two out of three cases, drug waste is not dumped, but discharged. In discharges, the liquid drug waste is poured directly onto the ground, into the sewer, or into surface water. The chance of being caught when discharging chemical waste is much smaller, while the consequences of a discharge on public health and nature are much more serious" says Verhaert [Mayor of Grobbendonk]. (Gazet van Antwerpen, 5 May 2023)*

An eventual increase in discharges could lead to a reduction in the number of dump sites detected, as noted by the Public Prosecutor's Office in a media interview:

*"Criminals are looking for alternative solutions, such as secret discharge sites. Barrels are buried to allow the chemical liquids to infiltrate the groundwater, or discharges are made into public sewers. That explains why fewer dumpings have been discovered in recent months", says Coppin [Public Prosecutor's Office]. "But the dangers are not reduced this way." (De Standaard, 31 May 2021).*

Beyond the difficulties around detection, direct discharges can seriously affect the functioning of wastewater treatment plants. For instance, a discharge of waste materials reported in the period under analysis affected a water treatment plant from Aquafin, with at least two employees sustaining injuries from sampling water that had been contaminated. One news article provided a detailed description of the incident, highlighting the challenges posed by this type of discharge:

*"The treated water discharged into a stream no longer met the quality standards". [Wolfs, the team coordinator at Aquafin:] "We also saw that the bacteria we use for water treatment had died". Wolfs suspects that this must be due to a very high concentration and quantity of chemical substances. "Compared to occasional manure discharges from farmers, this was much worse. If it's 300 or 400 litres, you don't notice much. It must have been much more. We even had to get bacteria from another treatment plant to re-inoculate ours" [...] After investigation, police and justice concluded that the discharged chemicals came from a drug lab. (Gazet van Antwerpen, 7 October 2021)*

Furthermore, recent research suggests that the infiltration of groundwater from emissions from drug production can have long-lasting effects, and residues from synthetic drugs may be present for several years (ter Laak and Emke, 2023). In addition, the authors' analysis of contaminated groundwater samples indicated that even though the site was cleaned up and remediation was performed shortly after its discovery, residues of the drugs produced and other compounds could still be found in the water and other sediments (ter Laak and Emke, 2023).

## Environmental-oriented responses to synthetic drug production and dumping in Flanders

A range of policies, regulations, and actions may be considered to mitigate the environmental harms associated with illegal synthetic drug production and the dumping of waste materials. Enhancing detection and ensuring efficient clean-up and remediation of both production and dump sites can help reduce these negative impacts. Beyond these efforts, we identified additional examples of environmental-oriented responses in the media dataset we analysed. First, there are actions aimed at increasing citizen awareness and supporting the reporting of suspicious activities related to the production or disposal of drugs and waste materials. While these awareness-raising initiatives are not primarily focused on improving awareness of the environmental harms, they seek to ensure prompt intervention, which could indirectly have a positive environmental impact. Multiple drug tip lines have been established in Flanders, first starting in the province of Limburg in 2019:

*"At the Limburg drug tip line, 1 173 reports have been received since its launch in 2019 until mid-October 2022. This has led to the discovery of 39 cannabis plantations and 6 labs where synthetic drugs were produced [...] A total of 115 reports led to the discovery of a drug-related incident, and more than a third of those reports provided additional information for an ongoing police investigation." (Het Belang van Limburg, 27 February 2023)*

More recently, drug tip lines have also been established in two other provinces: Antwerp, and Flemish Brabant. With a similar objective, municipalities have also hosted information sessions to educate citizens about specific aspects of drug production, for instance:

*“On Tuesday evening, about a hundred people from Noord-Limburg learned about the pungent smell of chemical materials used in drug production during an information session in Pelt. The Limburg Public Prosecutor’s Office and police hope that this will encourage people to report suspected drug production activities more frequently.” (Het Belang van Limburg, 31 March 2022)*

Beyond awareness raising, media reports on court proceedings related to the production and/or dumping of synthetic drugs in Flanders indicate that courts have acknowledged the actual or potential environmental harms associated with these activities. For instance, in one case, the public prosecutor warned:

*“The waste materials were discharged directly into our sewer system through a water hose that was connected from the chicken coop to the sewer system of the house. This organisation has acted extremely recklessly” (Het Belang van Limburg, 8 July 2021)*

Some court rulings seem to have also taken into account the environmental risks and harms:

*“The trade of synthetic drugs brings in quick and substantial profits. However, the chemical processes involved in their production, the uncontrolled storage of chemicals, and the dumping of drug waste pose significant risks to human health and the environment. The dumping of highly corrosive and toxic substances causes damage to fauna and flora, and children and passersby are at risk of coming into contact with the waste” (Het Belang van Limburg, 14 October 2021)*

In at least one case, the individual convicted was also required to cover environmental-related costs, including *“the process and clean-up costs of the waste, which amount[ed] to over 100 000 EUR” (Het Belang van Limburg, 16 July 2022)*. The significant financial burden of clean-up operations can be challenging, particularly for border municipalities most affected by the dumping of toxic waste from illegal synthetic drug production (Colman *et al.*, 2023).

## Conclusion and thoughts for further reflection

The latest developments concerning synthetic drug production in Flanders confirm transnational market dynamics and suggest a continued presence of this illegal activity in Belgium, only briefly affected by a major market shock such as the COVID-19 pandemic. The Flemish case also illustrates some of the key environmental challenges deriving from both the production as well as the disposal of the significant amounts of waste that are generated in the illegal manufacture of amphetamine, MDMA, and methamphetamine. Direct discharges of chemical waste are of particular concern, as the direct disposal of liquid waste onto ground, sewer, or surface waters might be harder to detect and can have long-lasting effects on the environment – even after remediation efforts (ter Laak and Emke, 2023). While the environmental impact of illegal synthetic drug production might be relatively small, for instance if compared to the levels of pollution of other legal sectors of activity (UNODC, 2022), it may have substantial effects locally. In the case of Belgium, for instance, production and dump sites have consistently been concentrated in the

border region between Belgium and the Netherlands (though it might now be spreading to other areas of the country). As a result, certain communities in those areas may be particularly exposed to the environmental hazards associated with illegal synthetic drug production and dumping.

Several actions can and have been taken with the goal of reducing the environmental impacts of the illegal manufacture of these substances. In our analysis, we found several media reports describing the detection of both production and dump sites in Flanders, though the challenge of identifying direct discharges has also been noted. A (more) rapid response when production or dump sites are identified could help reduce the associated environmental impacts. Efforts have also been made to raise awareness among the general population in Flanders, aiming to prevent or remediate potential or actual environmental harms. The drug tip lines established in Flanders are an example of this type of action. Though the provincial drug tip lines have received a substantial number of reports and contributed to advancing police investigations, having several tip lines for the same issue may create confusion. Citizens might be unsure about which line to use when reporting suspicious activity. And at the same time, residents of West and East Flanders, where synthetic drug production and dump sites have emerged in recent years, do not currently have access to a dedicated tip line. One potential solution could involve the establishment of a national tip line at the federal level, covering the entirety of the Belgian territory<sup>5</sup>.

While the aftercare and remediation process of this type of polluted sites can help mitigate negative environmental impacts, there are still important hurdles to this process in Belgium (Colman *et al.*, 2023). For instance, there are no national guidelines or standardized procedures on how to respond to these incidents, and so in practice the response on the ground tends to be based on informal agreements and can vary from case to case. Several actors, both public and private (e.g. law enforcement, environmental officers, private companies), can be called to the scene and information sharing among them is currently limited (Colman *et al.*, 2023).

Court sentencing that considers the extent of environmental damages is another example of action taken in this field. In some cases included in our media dataset, courts have taken into account the environmental harms caused by those involved in the illegal manufacture of synthetic drugs and the dumping of waste materials. They have, for instance, attributed some remediation costs to those responsible. However, the process of identifying and apprehending the culprits and determining liability for costs can be lengthy. To prevent further environmental and public health damage during this time, it may be beneficial to learn from approaches used in handling other environmental incidents. For instance, in the Netherlands, authorities promptly initiate the mitigation of environmental and public health risks, including site clean-up and remediation, even before determining who will bear the costs. In addition, since 2023, individuals affected by drug dumping on their property in the Netherlands can apply for subsidies to cover clean-up costs. Once the polluter is identified, compensation arrangements are made. No similar agreements are in place in Belgium yet.

Most of the current efforts identified are primarily reactive. This may be partly the result of our research approach, or it may reflect less media attention on more proactive measures.

5. A recent example of this approach is the Port Watch Tip Line, which was recently implemented to allow anonymous reporting of suspicious activities in Belgian ports. The platform comes at the initiative of the North Sea minister, DG Shipping of the FPS Mobility and Transport and the Federal Police. A national tip line, operating under a unified format and utilizing national resources, could streamline the reporting process for citizens by providing a single point of contact for reporting suspected cases.

In any case, perhaps lessons on alternative responses could be drawn from other areas as well. For instance, the Flemish waste management company IVAGO recently initiated a 'clean-up' campaign. This campaign encourages users and residents to bring nitrous oxide tanks to their recycling parks, offering a small financial incentive to prevent improper disposal of the tanks on the streets or on the wrong waste containers (IVAGO, 2024). A similar pilot project has been tested in the Netherlands (de Gelder, 2024). While applying this type of approach to the large-scale production of synthetic drugs may not be appropriate or feasible, it is important to expand the evidence base on environmental-oriented responses beyond the current focus on reactive measures. It is also worth exploring whether and how policy responses might, even if unintentionally, contribute

to environmental harms (as it has been the case with aerial fumigation of coca plantations) (Dávalos *et al.*, 2009). Furthermore, there is a need to consider environmental factors when developing regulatory frameworks (some authors have, for instance, identified areas for improvement in recent cannabis supply regulation) (Mills and Zeramby, 2022). Another concern is the potential for indirect effects, including the displacement of illegal activities to even more ecologically vulnerable areas, such as protected areas or national parks. As we found in the case of Flanders, the disposal of waste materials from synthetic drug production in forest areas and waterways is a common practice to evade detection. Learning from the drugs field but also other policy areas could contribute to advancing harm reduction environmental policies and responses.

## Methods

This analysis provides an update to Pardal *et al.* 2021. As such, we replicate the research approach here. Specifically, we draw on an analysis of Flemish newspapers with a focus on synthetic drug production and dumping in Belgium. While this type of data may have limitations, such as the risk of media framing, it can also be a source of complementary and timely information on trends and recent developments. In our previous analysis using this method, we found that the media coverage provided relevant, though generic, contextual information about these events. Often relevant stakeholders (including law enforcement representatives) were also interviewed in the media, providing additional nuances and/or validation of the issues being reported. We have adopted the following approach in identifying media articles:

### Summary of the search strategy

|                 |   |
|-----------------|---|
| Search platform | BelgaPress (formerly GoPress Academic)  |
| Time-frame      | 01/10/2020 - 01/09/2023   |
| Content types   | Print, online   |
| Language        | Dutch   |
| Country         | Belgium   |
| Newspapers      | De Morgen, De Standaard, Gazet van Antwerpen, Het Belang van Limburg  |
| Boolean query   | (drugs AND dumping) OR drugslab OR drugsafval OR (amfetamine AND dumping) OR (amfetamine AND lab) OR (amphetamine AND afval) OR (methamphetamine AND dumping) OR (methamphetamine AND lab) OR (methamphetamine AND afval) OR (MDMA AND dumping) OR (MDMA AND lab) OR (MDMA AND afval) |

Based on this search strategy we identified a total of 536 hits. After removing duplicates\* and irrelevant articles (e.g. articles reporting on other substances, such as the dumping of cannabis production materials or the illegal processing of cocaine, both of which may also cause environmental harms but are not the focus of the current analysis), we arrived at a total of N = 363 articles which were further analysed using NVivo software.

\* Please note that we did not exclude articles published by the same newspaper on the same date, which contained only slight textual differences (often tailored to publication in specific provinces or on the website of the newspaper in question).

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