

RECOMMENDATION PAPER

# Preventing the misuse of nitrous oxide



“

Our research has shown that Member States are mostly concerned about the negative effects on public health, rather than about fears of an increase in crime due to the consumption of the gas. We therefore recommend focusing on measures to counter the visibility and availability of nitrous oxide, keeping in mind that a thorough risk assessment should be carried out before imposing far-reaching interventions.

”

# INTRODUCTION

During the Croatian Presidency, the European Crime Prevention Network focused on the prevention of crime relating to party-drugs. In the past few years, the recreational use of nitrous oxide, also known as laughing gas or hippie crack, has become popular during music festivals and at party destinations in the Republic of Croatia. Since nitrous oxide is a substance with a number of legitimate uses in medicine and food industry, it can easily be bought and prohibiting unlawful sales is a difficult task. The Croatian Presidency has therefore asked the EUCPN to formulate recommendations that may contribute to the prevention of nitrous oxide misuse. However, our research has shown that Member States are mostly concerned about the negative effects on public health, rather than about fears of an increase in crime due to the consumption of the gas. We therefore recommend focusing on measures to counter the visibility and availability of nitrous oxide, keeping in mind that a thorough risk assessment should be carried out before imposing far-reaching interventions.

## **Citation**

EUCPN (2021).  
Recommendation paper:  
Preventing the misuse of  
nitrous oxide. Brussels.

## **Legal notice**

The contents of this publication do not necessarily reflect the official opinions of any EU Member State or any agency or institution of the European Union or European Communities.

## **Author**

Dorien Stevens, Policy officer EUCPN Secretariat

Part of the project  
'EUCPN Secretariat',  
January 2021, Brussels



With the financial support  
of the European Union's  
Internal Security Fund -  
Police

# CONTENTS

	<b><u>Introduction</u></b>	<b>3</b>
<b>01</b>	<b><u>What is it?</u></b>	<b>5</b>
<b>02</b>	<b><u>What are the health risks?</u></b>	<b>6</b>
<b>03</b>	<b><u>Crime related to the use of laughing gas</u></b>	<b>7</b>
<b>04</b>	<b><u>The state of play in the Member States</u></b>	<b>8</b>
<b>05</b>	<b><u>Recommendations</u></b>	<b>9</b>
<b>06</b>	<b><u>Develop an effective answer response to prevent the misuse of nitrous oxide</u></b>	<b>11</b>
	<b><u>Endnotes</u></b>	<b>12</b>
	<b><u>Bibliography</u></b>	<b>13</b>

# D1 WHAT IS IT?



Nitrous oxide is a colourless, non-flammable gas with a slightly sweet odour which has been used as a medical anaesthetic for over 150 years and continues to be widely used for medical, dental and veterinary purposes. More recently, nitrous oxide has been used in the catering industry as a mixing and foaming agent. Whipped cream chargers or 'whippets' in the form of 8g steel cylinders are used for that purpose.<sup>1</sup>

As long ago as Victorian times, it was discovered that when inhaled, the gas can produce euphoria that is

accompanied by pleasurable and psychedelic effects. It is this that led to its use as a common recreational drug at laughing gas parties.<sup>2</sup> In the new millennium, nitrous oxide has re-emerged as one of the most commonly used 'legal highs' by adolescents and young people on the party scene. Because of its legitimate uses, nitrous oxide can be obtained in supermarkets, catering shops, online, or even in clubs in most Member States of the European Union.<sup>3</sup>

# 02 WHAT ARE THE HEALTH RISKS?

Inhaling nitrous oxide can lead to acute harm, such as intoxication. Respiratory, cardiovascular, neurological and psychiatric effects are some of the consequences that may occur. However, there are situations in which more serious damage may be caused. For example, if volatile substances or gases that are much more toxic or potent are accidentally used, if users combine the use of nitrous oxide with alcohol or other drugs<sup>4</sup> or if the gas is inhaled directly from capsules or cylinders instead of inhaled from a balloon.<sup>5</sup> Furthermore, small caplets are often cheap unregulated imports from China, and have been found to contain particulate matter and an oily residue that is not found in those purchased from reputable sources and intended for use as an anaesthetic or in the food industry.<sup>6</sup> As the effects are short-lasting and pleasurable, people may use it or re-dose frequently<sup>7</sup> and people who report accidents are those that report the largest number of doses per session.<sup>8</sup> The fact that people commonly use nitrous oxide with alcohol and drugs to enhance the effects increases the chances of causing harm.<sup>9</sup>

When it comes to harms associated with chronic use and dependence, there are currently no reported instances of nitrous oxide dependence in the literature, and it has been suggested that its addictive potential is low. Even so, heavy or sustained use of N<sub>2</sub>O inactivates vitamin B12, resulting in a functional vitamin B12 deficiency. This initially causes numbness in the fingers, which may progress and develop into serious physical conditions.<sup>10</sup> And although the evidence is limited, it is possible that nitrous oxide may exacerbate some mental health problems, and its use has been linked to manic relapse.<sup>11</sup> Despite these harmful effects, the results of the Global Drug Survey conclude that the majority of nitrous oxide users are not worried about the health effects associated with its use.<sup>12</sup> Even researchers relativise the danger that the use of laughing gas entails. They claim that for those who do not consume laughing gas heavily, it is a 'remarkably safe drug', unless people are drunk or high on other drugs.<sup>13</sup>

# 03 CRIME RELATED TO THE USE OF LAUGHING GAS

---

We sent out a questionnaire to the EUCPN representatives of the EU Member States. Of the sixteen Member States which replied to the questionnaire, six<sup>14</sup> are facing problems relating to the human recreational use of nitrous oxide. The results have also shown that Member States that imposed measures to reduce the use of nitrous oxide did so as a result of public health concerns, and not because the use of nitrous oxide is giving rise to an increase in crime. Whenever there is a link with criminal behaviour, it mostly concerns nuisance in the public spaces which occurs in the form of noise disturbance, pollution and gatherings. These factors can increase the feelings of insecurity in a neighbourhood. Litter, for example, is an indicator associated with less social control, increased crime and insecurity in a neighbourhood.<sup>15</sup> Furthermore, in the Netherlands, the number of traffic incidents that are connected with nitrous oxide is also on the rise.

However, it is difficult to prove the use of nitrous oxide while participating in traffic because the direct effect of nitrous oxide on humans is short, and its use is generally not detectable in the driver's blood, urine, breath or saliva.<sup>16</sup>

If the link between the use of laughing gas and crime is weak, it is a logical to ask whether there are indications that organised crime groups are involved.

If the link between the use of laughing gas and crime is weak, it is a logical question to ask there are indications that organised crime groups are involved. According to a study in the Netherlands, the risk that trade in nitrous oxide is becoming intertwined with organised crime is small. This is because nitrous oxide can easily be obtained by legal means. There are however some indications that criminal organisations are involved, as the trade is a lucrative one.<sup>17</sup> It should be borne in mind that

limiting the legal sale of nitrous oxide may lead to the emergence of a criminal circuit.

# 04 THE STATE OF PLAY IN THE MEMBER STATES

---

In most Member States, nitrous oxide is not a controlled substance. Nonetheless, some **countries apply regulations that limit the sale of nitrous oxide.**

In some countries, such as Spain, the sale of nitrous oxide for catering and other legitimate reasons is legal unless the person who sells it knows or might suspect that the substance is being acquired for human consumption. In addition, there are countries, such as Ireland, which already criminalise the sale of nitrous oxide to individuals under the age of 18, rather than its inhalation or consumption. In January 2020, after several disturbing incidents, a package of six measures to restrict the sale of nitrous oxide to minors below the age of 18 was taken by the Danish government. The effect of these measures will be evaluated in early 2021 and will provide interesting information for other Member States that are facing the same problems. Other countries are in the process of adopting such legislation, even though many experts do not support a ban on the sale of nitrous oxide. Not only could a ban draw additional attention to the possible misuse of nitrous oxide, but it can be easily circumvented via the internet and would be very difficult

to enforce, given the legal use of nitrous oxide in the catering industry.<sup>18</sup>

After carrying out a risk assessment, the Dutch government is going one step further and has decided to place nitrous oxide in schedule II of the Dutch Opium Act as a supply reduction measure, thereby labelling it as 'soft drugs'. This means that that all imports/exports of, trade in and sales of nitrous oxide will be prohibited. However, in small quantities, it can still be sold to private individuals for use as a food additive. It should also be noted here that its use will not be prohibited. The reason for this is in order to avoid a situation in which the fear of facing criminal charges may discourage people who are experiencing (health) problems related to their drug use from seeking help and assistance. The Netherlands and Belgium have indicated that the use of nitrous oxide can be prohibited on a local level by utilising local ordinances that are already in place.

Many experts do not support a ban on the sale of nitrous oxide. Not only could a ban draw additional attention to the possible misuse of nitrous oxide, but it can be easily circumvented via the internet and would be very difficult to enforce, given the legal use of nitrous oxide in the catering industry.

# 05 — RECOMMENDATIONS

If not a ban, what can be done to address the public health concerns relating to the misuse of nitrous oxide? Measures should be proportionate; we must not use a sledgehammer to crack a nut. In view of the fact that the vast majority of users use nitrous oxide infrequently and the fact that the use that they make of it is not associated with significant harm, far-reaching interventions are unnecessary. If, however, the proportion of heavy users at risk of acute harm were to increase, more severe intervention may become appropriate.

A thorough risk assessment is the only method of indicating which intervention is most suitable in any one situation. By carrying out an assessment, more information can be obtained on the situation regarding the use, the related harm and the availability of laughing gas. Gathering this information is also a good starting point for monitoring the implementation.<sup>19</sup>

The questionnaire has shown that the Netherlands is the only country which has carried out such an assessment. In the Netherlands, it is standard procedure that the government may only propose policy actions for new drugs based on such a risk assessment. In Ireland, the Health Service Executive (HSE) is also gathering evidence on the use of nitrous oxide on a national level, thanks to the involvement of HSE Addiction Managers and Drug and Alcohol Task Forces. The HSE is also in contact with An Garda Síochána (Ireland's police force) and hospitals, and have contacted the National Poisons Information Centre in this regard. This work is currently still ongoing and the hope is that some results will be available later this year. In 2021, the EMCDDA will carry

out a European Web Survey on Drugs and patterns of use. The inclusion of nitrous oxide in the survey will be considered.

If a risk assessment is carried out, countries will be able to identify the **area, setting and target groups** for possible interventions. Experts are in favour of targeted and tailored interventions, since there is a risk that highlighting hypes on a national level may act as a pull factor.<sup>20</sup>

In general, the recreational use of nitrous oxide is particularly high on the party scene and can be tackled in that setting by the **formation of partnerships** and by **community mobilisation**. The goal of forming partnerships is to motivate and mobilise stakeholders within the community to play their part in preventing the use of laughing gas. At first, the objective will be to raise awareness and increase knowledge among local stakeholders in order to get them involved. Secondly, community engagement with different target groups within the setting should be established. The goal of the community engagement is to **counter the visibility and availability**<sup>21</sup> of nitrous oxide.

The fact that these cartridges are extremely easy to purchase in a store and that large amounts of empty silver canisters of nitrous oxide can be found in public spaces may lead to the impression that consuming nitrous oxide is normal and harmless. To reduce **visibility**, local merchants can agree not to display nitrous oxide visibly in their stores and/or not to promote the sale of nitrous oxide in their stores, by giving discounts,

for example.<sup>22</sup> Placing more waste bins or deploying more street cleaning teams at locations where nitrous oxide cartridges are discarded is also a possible way of countering the impression referred to above. In addition, research in Rotterdam has shown that using small nudges<sup>23</sup> leads to a reduction of pollution behaviour and an increased sense of safety. Examples of these nudges are placing footsteps from the walking routes to the rubbish bins or giving grey, inconspicuous rubbish bins a striking green colour.<sup>24</sup>

Interventions which reduce the **availability** of nitrous oxide can also be taken into account. As stated above, the harmful effects of nitrous oxide may increase when combined with other substances such as drugs or alcohol. A possible decision may therefore be to limit the points of sale to stores that sell kitchen appliances, since nitrous oxide cartridges are intended for cooking. These stores are not open in the evening or at night, so the gas cannot be bought together with alcohol. We have also seen that people using more than 5-10 balloons in one session are more likely to report accidents. Restricting the sale of large quantities to private individuals would consequently be an option. To avoid users circumventing

In general, the recreational use of nitrous oxide is particularly high on the party scene and can be tackled in that setting by the formation of partnerships and by community mobilisation.

the restrictions via the internet, practitioners can agree with dealers to provide a system that effectively verifies the age of the buyer - for example via Easy ID.<sup>25</sup> In

cases where nitrous oxide is used during festivals or other events, municipalities can also include specific conditions in the permits.<sup>26</sup>

For the same reasons that measures should be localised, **awareness raising campaigns** should be **tailored** and **targeted**.

A good example of problem assessment is the initiative in the Netherlands to facilitate research into the motives for using nitrous oxide while participating in traffic by involving focus groups composed of adolescents and young

adults. Using the results of this research, a campaign is currently being developed to combat the recreational use of nitrous oxide in traffic. Other awareness campaigns have focused on communicating a few simple tips, given by clinicians, in order to help users reduce the risk of nitrous oxide related harm.<sup>27</sup> In addition, the Dutch Trimbos Institute, is attempting to influence the user through his or her environment; an information flyer and video for parents, teachers, ... Through this approach, they want to prevent young people, who are not already using nitrous oxide, from becoming curious.<sup>28</sup>

# 06

## DEVELOP AN EFFECTIVE ANSWER TO PREVENT THE MISUSE OF NITROUS OXIDE

### STEP

## 01

### Carry out a risk assessment

### STEP

## 03

### Partnership formation and community mobilisation

In order to agree on measures to counter visibility and availability

#### 1. Visibility

- > Nitrous oxide is not visibly displayed in stores
- > No promotions to increase the sale of nitrous oxide
- > Placing more striking waste bins at hot spots
- > Deploying more street cleaning

#### 2. Availability

- > Limit the points of sale so that nitrous oxide cannot be bought together with alcohol or at night
- > Restrict the sale of large quantities to private individuals
- > Online age verification
- > Include a prohibition banning the sale of nitrous oxide in nightlife permits

#### 3. Awareness campaigns

- > Avoid general awareness campaigns
- > Develop tailored and targeted campaigns

### STEP

## 02

### Identify the area, setting and target groups

This will allow you to carry out targeted and tailored interventions

### STEP

## 04

### Evaluate the effectiveness of measures taken

# ENDNOTES

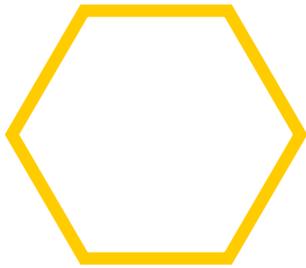
- 1 Stephen Kaar et al., Up: The Rise of Nitrous Oxide Abuse: An International Survey of Contemporary Nitrous Oxide Use, *Journal of Psychopharmacology* 30:4 (2016).
- 2 Ibid.
- 3 DrugWatch, Information Sheet Nitrous Oxide, 29 Mar. 2017.
- 4 Dima Abdulrahim and Owen Bowden-Jones, Guidance on the Clinical Management of Acute and Chronic Harms of Club Drugs and Novel Psychoactive Substances, London: Novel Psychoactive Treatment UK Network (NEPTUNE), 2015.
- 5 DrugWatch, Information Sheet Nitrous Oxide.
- 6 Kaar et al., Up: The Rise of Nitrous Oxide Abuse: An International Survey of Contemporary Nitrous Oxide Use.
- 7 Abdulrahim and Bowden-Jones, Guidance on the Clinical Management of Acute and Chronic Harms of Club Drugs and Novel Psychoactive Substances.
- 8 Kaar et al., Up: The Rise of Nitrous Oxide Abuse: An International Survey of Contemporary Nitrous Oxide Use.
- 9 DrugWatch, Information Sheet Nitrous Oxide.
- 10 Jan van Amsterdam, Ton Nabben, and Wim van den Brink, Recreational Nitrous Oxide Use: Prevalence and Risks, *Regulatory Toxicology and Pharmacology* 73:3 (2015).
- 11 Abdulrahim and Bowden-Jones, Guidance on the Clinical Management of Acute and Chronic Harms of Club Drugs and Novel Psychoactive Substances.
- 12 Kaar et al., Up: The Rise of Nitrous Oxide Abuse: An International Survey of Contemporary Nitrous Oxide Use.
- 13 Camilla Ruz, How Dangerous Is Laughing Gas?, BBC News, 31 July 2015.
- 14 Belgium, Denmark, Croatia, Ireland, The Netherlands and Sweden
- 15 Dijksterhuis & van Baaren, Een Schone Boel En Een Veilig Gevoel: Verminderd Vervuilgedrag En Verhoogde Veiligheidsgevoelens Door Een Gedragsinterventie in Rotterdamse Straten, Nijmegen: Radboud Universiteit, 2015.
- 16 Politie Nederland, Steeds Meer Incidenten Met Lachgas in Het Verkeer, [www.politie.nl](http://www.politie.nl), 8 Nov. 2019.
- 17 Coördinatiepunt Assessment en Monitoring nieuwe drugs, Risicobeoordeling Lachgas, Bilthoven, 2019.
- 18 Katrin Swartenbroux, 'Eerlijk, Lachgas Was De Meest Suffe Trip Ooit': De Nieuwste Drugshype, Niet Om Te Lachen, De Morgen, 24 July 2020.
- 19 Laura Nijkamp Marjan Möhle, Jeroen de Greeff, Joost Mulder, STAD in Europe: A Manual for Communities Preventing Alcohol Related Harm, n.d.
- 20 Fédération Bruxelloise des Institutions pour Toxicomanes, Avis Écrit Adressé À La Chambre Des Représentants, Commission De La Santé Publique Concernant La Proposition De Loi Visant À Interdire La Vente De Cartouches Métalliques Contenant Du Protoxyde D'azote Aux Mineurs, Brussels: FEDITO, Apr. 16 2018.
- 21 Swartenbroux, 'Eerlijk, Lachgas Was De Meest Suffe Trip Ooit': De Nieuwste Drugshype, Niet Om Te Lachen.
- 22 As is the case in Belgium and The Netherlands
- 23 A nudge, as we will use the term, is any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid.
- 24 Dijksterhuis & van Baaren, Een Schone Boel En Een Veilig Gevoel: Verminderd Vervuilgedrag En Verhoogde Veiligheidsgevoelens Door Een Gedragsinterventie in Rotterdamse Straten.
- 25 Denmark has limited the points of sale and quantities
- 26 As is the case in The Netherlands
- 27 Kaar et al., Up: The Rise of Nitrous Oxide Abuse: An International Survey of Contemporary Nitrous Oxide Use.
- 28 van de Westeringh Mattijs, Nijkamp Laura, and Mangnus Hans, Lachgas: Geen Lachertje, Webinar Dutch Crime Prevention Council, 2020.

# BIBLIOGRAPHY

- Abdulrahim, Dima & Owen Bowden-Jones. Guidance on the Clinical Management of Acute and Chronic Harms of Club Drugs and Novel Psychoactive Substances. London: Novel Psychoactive Treatment UK Network (NEPTUNE), 2015.
- Coördinatiepunt Assessment en Monitoring nieuwe drugs. Risicobeoordeling Lachgas. Bilthoven, 2019.
- Dijksterhuis & van Baaren. Een Schone Boel En Een Veilig Gevoel: Verminderd Vervuilgedrag En Verhoogde Veiligheidsgevoelens Door Een Gedragsinterventie in Rotterdamse Straten. Nijmegen: Radboud Universiteit, 2015.
- DrugWatch. Information Sheet Nitrous Oxide. 29 Mar. 2017.
- Fédération Bruxelloise des Institutions pour Toxicomanes. Avis Écrit Adressé À La Chambre Des Représentants, Commission De La Santé Publique Concernant La Proposition De Loi Visant À Interdire La Vente De Cartouches Métalliques Contenant Du Protoxyde D'azote Aux Mineurs. Brussels: FEDITO, Apr. 16 2018. <https://feditobxl.be/site/wp-content/uploads/2018/08/Avis-%C3%A9crit-Fedito-Bxl-sur-le-protoxyde-dazote-2018-04-16-v2.pdf>.
- Kaar, Stephen, Jason Ferris, Jon Waldron, Madonna Devaney, John Ramsey & Adam Winstock. Up: The Rise of Nitrous Oxide Abuse: An International Survey of Contemporary Nitrous Oxide Use. *Journal of Psychopharmacology* 30:4 (2016), 395-401. <https://dx.doi.org/10.1177/0269881116632375>.
- Marjan Möhle, Laura Nijkamp, Jeroen de Greeff, Joost Mulder. STAD in Europe: A Manual for Communities Preventing Alcohol Related Harm. n.d. <http://stadineurope.eu/resources/sie-manual/>.
- Mattijs, van de Westeringh, Nijkamp Laura & Mangnus Hans. Lachgas: Geen Lachertje. Webinar Dutch Crime Prevention Council. 2020.
- Politie Nederland. Steeds Meer Incidenten Met Lachgas in Het Verkeer. [www.politie.nl](http://www.politie.nl). 8 Nov. 2019. <https://www.politie.nl/nieuws/2019/augustus/9/00-steeds-meer-incidenten-met-lachgas-in-het-verkeer.html> (Accessed 11 Sept. 2020).
- Ruz, Camilla. How Dangerous Is Laughing Gas? BBC News. 31 July 2015. <https://www.bbc.com/news/magazine-33691783> (Accessed 14 Oct. 2020).
- Swartenbroux, Katrin. 'Eerlijk, Lachgas Was De Meest Suffe Trip Ooit': De Nieuwste Drugshype, Niet Om Te Lachen. De Morgen. 24 July 2020. <https://www.demorgen.be/nieuws/eerlijk-lachgas-was-de-meest-suffe-trip-ooit-de-nieuwste-drugshype-niet-om-te-lachen~b8181e60/> (Accessed 9 Sept. 2020).
- van Amsterdam, Jan, Ton Nabben & Wim van den Brink. Recreational Nitrous Oxide Use: Prevalence and Risks. *Regulatory Toxicology and Pharmacology* 73:3 (2015), 790-6. <https://dx.doi.org/10.1016/j.yrtph.2015.10.017>.







## **CONTACT DETAILS**

EUCPN Secretariat  
Email: [eucpn@ibz.eu](mailto:eucpn@ibz.eu)

Website: [www.eucpn.org](http://www.eucpn.org)

 [TWITTER.COM/EUCPN](https://twitter.com/EUCPN)

 [FACEBOOK.COM/EUCPN](https://facebook.com/EUCPN)

 [LINKEDIN.COM/COMPANY/EUCPN](https://linkedin.com/company/eucpn)