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Draft amendments to the Swedish Chemicals Agency’s Regulations (KIFS 2017:7) on Chemical Products and Biotechnological Organisms

Summary

Under the draft amendments, special authorisation is to be required for private individuals to be able to use corrosive blocked pipe dissolvents. The draft amendments are being made in light of the increase in the number of accidents involving corrosive blocked pipe dissolvents, while at the same time professional users rarely use corrosive blocked pipe dissolvents as they prefer other alternatives.

Blocked pipe dissolvents are used to clean or clear drains of grease, hair, soap and food waste. Many blocked pipe dissolvents on the Swedish market contain sodium hydroxide and potassium hydroxide, and are highly corrosive.

In Sweden there is a system of authorisation requirements for the private use and professional transfer of particularly hazardous chemical products. Authorisation is granted by the county administrative boards. The products to be regarded as being particularly hazardous are laid down in the Swedish Chemicals Agency’s regulations.

Products containing potassium hydroxide and sodium hydroxide, including corrosive blocked pipe dissolvents, are currently exempted from authorisation requirements. Corrosive blocked pipe dissolvents can cause serious injuries if handled and stored carelessly.

The Agency investigated various options for regulating the use of blocked pipe dissolvents and found there to be grounds for these products to be covered by the authorisation requirements for non-professional use. During this work, other authorities and the industry were consulted.

This memorandum outlines draft amendments to the Swedish Chemicals Agency’s Regulations (KIFS 2017:7) on Chemical Products and Biotechnological Organisms. The purpose of the draft amendments is to limit access to corrosive blocked pipe dissolvents for non-professional use in order to reduce the number of accidents involving these products. Under the draft amendments, special authorisation would be required for private individuals to be able to use corrosive blocked pipe dissolvents. The amendments are to enter into force six months after being adopted.

### DRAFT STATUTE

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| Current wording | Proposed wording |
| Chapter 4  Section 3 The provisions of Sections 7 and 9-14 of the Ordinance (2008:245) shall not apply to sodium hydroxide and potassium hydroxide as substances or in mixtures. Nor shall the provisions apply to explosives, fuel oils or fuels intended for engine operation.  In the case of methanol products intended as fuel for engine operation, authorisation is, however, required for professional transfer in accordance with Section 7(2) of the Ordinance (2008:245). Otherwise, such methanol products may be handled without the authorisation referred to in Section 7(1) of the Ordinance (2008:245).  Chemical products classified as Skin Corrosive in hazard category 1A, which are considered to be particularly hazardous products solely because of their corrosive properties, are not subject to the authorisation requirements for professional transfer in accordance with Section 7(2) of the Ordinance (2008:245).  Section 3a The provisions laid down in Section 7(1) and Section 9(2) of the Ordinance (2008:245) shall not apply to liquids for electronic cigarettes and for refill containers for electronic cigarettes containing not more than 20 mg/ml nicotine. | Chapter 4  Section 3 The provisions of Sections 7 and 9-14 of the Ordinance (2008:245) shall not apply to sodium hydroxide and potassium hydroxide as substances or in mixtures. Nor shall the provisions apply to explosives, fuel oils or fuels intended for engine operation.  *Section 3a By way of derogation from Section 3, however, authorisation is required*  *1. for professional transfer in accordance with Section 7(2) of the Ordinance (2008:245) of methanol products intended as fuel for engine operation. Otherwise, such methanol products may be handled without the authorisation referred to in Section 7(1) of the Ordinance (2008:245),*  *2.* *for handling that is not in a professional capacity in accordance with Section 7(1) of the Ordinance (2008:245) of sodium hydroxide and potassium hydroxide as substances or in mixtures intended for clearing or cleaning drains. For the aforementioned products the provisions of Section 9(2) of the Ordinance (2008:245) also apply.*  *Section 3b The provisions laid down in Section 7(1) and Section 9(2) of the Ordinance (2008:245) shall not apply to liquids for electronic cigarettes and for refill containers for electronic cigarettes containing not more than 20 mg/ml nicotine. (2021:8)*  *The provisions concerning the authorisation requirement for professional transfer in accordance with Section 7(2) of the Ordinance (2008:245) shall not apply to chemical products classified as Skin Corrosive in hazard category 1A which are considered to be particularly hazardous products solely because of their corrosive properties.* |

The amendment is set out in Section 3a(2) above. Other amendments are editorial.

## Background to the draft amendments

Corrosive blocked pipe dissolvents can cause serious injuries if handled and stored carelessly. Every year, children and adults are treated in hospital after injury to the mouth and oesophagus, eyes, respiratory tract and skin caused by corrosive blocked pipe dissolvents. In some cases, the injuries are permanent. The number of calls to the Poisons Information Centre (GIC) about incidents that involve corrosive blocked pipe dissolvents that are deemed to entail a risk[[1]](#footnote-2) has increased in recent years (see section 3.2 Poisoning incidents involving blocked pipe dissolvents).

The skin corrosive effect of a substance or mixture may be categorised as category 1 or subcategory 1A, 1B or 1C according to the criteria of the CLP Regulation[[2]](#footnote-3) (see section 3.1.1 Hazard characteristics). Chemical substances and mixtures classified as Skin Corrosive in hazard category 1A are considered to be highly corrosive. For the purposes of this memorandum, corrosive or highly corrosive blocked pipe dissolvent means sodium hydroxide and potassium hydroxide as substances or in mixtures for clearing or cleaning drains.

According to information from the Swedish Chemicals Agency’s Products Register, many chemical blocked pipe dissolvents on the Swedish market are highly corrosive. Highly corrosive products are regarded as particularly hazardous to health.

Many countries have extensive regulation restricting the right to buy and sell chemicals that are most hazardous to health. Rules aimed at protecting human health from harm have been in Swedish law for almost 400 years. The regulatory framework for highly corrosive products and especially blocked pipe dissolvents is complex. In addition to Swedish authorisation ules for particularly hazardous chemical products, there are also national restrictions governing blocked pipe dissolvents and EU-wide rules on classification, labelling and packaging through the CLP Regulation (see section 2.1.1 Classification, labelling and packaging). The Swedish authorisation rules prevent private individuals from handling highly corrosive substances and mixtures without authorisation. However, an existing exemption from the authorisation rules allows the use of sodium hydroxide and potassium hydroxide, as substances or in mixtures, which covers many blocked pipe dissolvents.

A number of alternatives to highly corrosive blocked pipe dissolvents are available, such as mechanical alternatives like plungers or plumbing snakes. A professional plumber or flushing truck can be hired for more difficult drain blockages. Preventive measures can also be used to stop blockages in the first place, such as by wiping out your frying pan with paper, using a hair trap in the floor drain and regularly flushing the drains with hot water. Biological agents that prevent drain blockages are also available.

### Previous inquiries

In 2011, the Government commissioned the Swedish Chemicals Agency to carry out a review of the Swedish rules on authorisation for particularly hazardous chemical products. The report ‘Överlåtelse av särskilt farliga kemiska produkter m.m. – rapport från ett regeringsuppdrag’ (‘Transfer of particularly hazardous products – Report on assignment from Government’) provided, among other things, the assessment that highly corrosive chemical products have such serious characteristics that they should continue to be included in the term ‘particularly hazardous chemical products’. It also recommended that private handling of highly corrosive products should continue to require authorisation. A review of the exemptions from the authorisation requirements was also proposed.

The timing of the proposed review was set in light of the urgent need to consider a number of time-limited exemptions that were expiring. The review document (‘PM om ändringsföreskriften KIFS 2017:3’ ‘Memorandum on amendments for KIFS 2017:3’) examines the options for and impact of removing existing derogations from the authorisation rules. The short period of time available for the inquiry was not sufficient to examine in more detail the complex issue of exempting highly corrosive products containing sodium hydroxide and potassium hydroxide. The plan was therefore to carry out a specific, more comprehensive inquiry, taking into account national restrictions and the EU perspective, in addition to the authorisation rules.

Since chemicals are mainly regulated at EU level, the Swedish Chemicals Agency also analysed appropriate risk management measures for blocked pipe dissolvents used by consumers at EU level[[3]](#footnote-4). The proposals were discussed at an informal meeting (RIME, Risk Management and Evaluation) with participants from REACH authorities in other Member States and the European Commission. As there were uncertainties as to whether an EU-wide restriction on use or conditions on use would control risks in a proportionate manner, the Swedish Chemicals Agency proposed in the final report that voluntary measures by the International Association for Soaps, Detergents and Maintenance Products (AISE) and its member organisations were the most appropriate risk management measure, at least in the short term. However, the Swedish Chemicals Agency was open to the possibility that, depending on the outcome of the voluntary measures and if more information emerged, for example on the health economic consequences of accidents, it may be necessary to resume the discussion on regulatory measures at EU level.

In the autumn of 2020, the Swedish Chemicals Agency was contacted by the Norwegian Environment Agency because the Norwegian Poisons Information Centre had seen a sharp increase in the number of incoming calls about accidents involving liquid blocked pipe dissolvents[[4]](#footnote-5). In order to investigate whether there were similar problems in other EU Member States, Sweden and Norway requested information on accidents involving blocked pipe dissolvents in the RIME forum. Four Member States provided accident statistics. In summary, these States did not outline any increase in the number of reported accidents over the last 5-10 years. The number of reported accidents compared to the population in the four Member States was also much lower than in Sweden and Norway.

In light of the circumstances set out above, the Swedish Chemicals Agency came to the conclusion, including in the context of the ‘Giftfri vardag’ (‘Toxic-free everyday environment’) assignment from the Government, that the problems involving blocked pipe dissolvents were of such magnitude that special efforts were needed.[[5]](#footnote-6)

The inquiry focused on blocked pipe dissolvents as they account for a significant proportion of the accident statistics involving corrosive products reported to the GIC.

# Applicable law

Chemicals are mainly regulated by legislation at EU level. There is a large body of overarching regulation covering the different aspects of chemicals handling in the EU. In the absence of regulation at EU level, Member States have certain options for introducing national regulations. Sweden also has some provisions in the field of chemicals from before 1995 when it became a member of the EU.

### EU law

#### 2.1.1 Classification, labelling and packaging

In accordance with Article 4(4) of the CLP Regulation, substances and mixtures classified as hazardous must have certain labelling on the packaging before the product is placed on the market. The packaging label consists of standardised phrases and symbols that together inform the user about the hazardous characteristics of the product and how it can be handled safely. The label shall include, inter alia, hazard pictograms intended to provide specific information on the hazard in question, signal words, hazard statements and precautionary statements. The classification of the product determines the particulars to be indicated on the label.

Chemical products classified as Skin Corrosivein category 1/1A/1B/1C shall be labelled, inter alia, with a hazard pictogram (GHS05) indicating that the product is corrosive and shall be marked with hazard statement H314: ‘Causes severe skin burns and eye damage’. The label shall also include the signal word ‘Danger’ and a number of precautionary statements providing information on how to handle the product safely, such as ‘Wear protective gloves and eye protection’, the measures to be taken if you come into contact with the product, how to store the product and how the waste is to be handled (Articles 17 and 19-22 of the CLP Regulation).

Substances and mixtures sold or made available to the general public which are classified as Skin Corrosive must have packaging bearing a tactile warning. The purpose of this is to provide people who are visually impaired with information about the danger. The packaging of such products must also have a child-resistant fastening (Article 35(2) and Annex II, points 3.1 and 3.2 of the CLP Regulation).

### Regulation in Sweden

#### Authorisation for particularly hazardous chemical products

Rules on authorisation for the transfer and private use of particularly hazardous chemical products are laid down in Sections 7-14 of the Ordinance (2008:245) on Chemical Products and Biotechnological Organisms (hereinafter the Chemical Products Ordinance). The provisions of the Ordinance are supplemented by provisions in Chapter 4 of the Swedish Chemicals Agency’s Regulations (KIFS 2017:7) on Chemical Products and Biotechnological Organisms (hereinafter KIFS 2017:7), which stipulate, among other things, the products to be regarded as particularly hazardous products, the exemptions from the authorisation requirements that exist and clarifications concerning the recordkeeping obligation for products that are subject to authorisation.

Blocked pipe dissolvents which are classified under the CLP Regulation as Skin Corrosive 1A and are to be labelled with the hazard pictogram Corrosive (GHS05) and the signal word Danger are considered to be particularly hazardous chemical products. The group of particularly hazardous chemical products generally consists of the chemicals in society that are most hazardous to health. In addition to those highly corrosive products that can cause serious corrosion injuries directly from short-term exposure, the group also includes, for example, chemical products that can cause cancer, cause hereditable genetic damage, birth defects or impaired reproductive capacity (Chapter 4 Section 2 KIFS 2017:7).

As a general rule, authorisation is required for the transfer in a professional capacity and the handling in a non-professional capacity of particularly hazardous chemical products. Such products may also only be transferred to someone who will use the products in a professional capacity, someone who is authorised to handle the products or whose handling of the products is subject to certain exemptions provided for in the Ordinance. (Sections 7 and 9 of the Chemical Products Ordinance). Chapter 4 Section 3 KIFS 2017:7 contains some additional exemptions, including for sodium hydroxide and potassium hydroxide as substances or in mixtures. Therefore, blocked pipe dissolvents containing these substances can be sold and purchased by consumers without the need for the buyer or seller to have authorisation to do so. There is also a general exemption from the authorisation requirements for the professional transfer of products classified only as Skin Corrosive in category 1A.

The county administrative boards examine cases for particularly hazardous chemical products that require authorisation for transfer and handling. An application may relate to several sales outlets in one county or sales outlets located in several counties. In the latter case, the application is made in the county where the head office is located.

Normally, the county administrative board must make its decision within eight weeks of a complete application having been received by the county administrative board. This period may be extended by a further four weeks if necessary due to the investigation into the case. The Chemical Products Ordinance does not specify the criteria for examining an application for authorisation to transfer particularly hazardous chemical products. However, in the case of an application for non-professional handling, the Ordinance provides that authorisation may be granted only to those aged 18 or over and who need the products for an artistic, technical, scientific or similar purpose. Authorisation may not be valid for more than five years (Sections 11-13 of the Chemical Products Ordinance).

The fee for an application concerning professional transfer is SEK 2 900 and the fee for an application concerning non-professional handling is SEK 870. The fee is the same regardless of how many products and how many sales outlets the application covers. The fees are determined by the county administrative boards.

The exemption from authorisation requirements for the handling of sodium hydroxide and potassium hydroxide has been in force since the Chemical Products Act (1985:426) entered into force on 1 January 1986. The reason for exempting these products appears to be that the use of these products was widespread in society at that time and their use was not perceived as problematic. The Government’s explanatory notes (1985:8) for the Chemical Products Ordinance justify the exemptions as follows: ‘Highly corrosive products, which include pre-packaged lye powder and a large number of products for industrial and institutional cleaning, have not been regarded as toxic under previous provisions and could therefore be sold without authorisation.’

#### Obligation to keep records

Under Section 10 of the Chemical Products Ordinance, anyone who transfers particularly hazardous chemical products must keep records of the transfers. Chapter 4 Section 4 KIFS 2017:7 lays down additional requirements for persons who transfer particularly hazardous chemical products in a professional capacity to record certain information on the sale. As a general rule, this obligation to keep records applies to products transferred both for professional handling and for private use. The information to be recorded by the transferor is the date of sale, the product name and quantity, the name and address of the buyer, and whether the product has been transferred for professional or private use. In the case of handling for private use, the records shall also indicate how the buyer has demonstrated their eligibility, i.e. that the person has authorisation to handle the product. Chapter 4 Section 5(1) exempts sodium hydroxide and potassium hydroxide, as substances or in mixtures, from the recordkeeping obligation by excluding them from the authorisation obligation. In addition, other chemical products which are classified as Skin Corrosive in hazard category 1A and which are considered particularly hazardous products solely because of their corrosive properties are exempt from the recordkeeping obligation in the case of transfers for professional handling, in accordance with Chapter 4 Section 5(2). The transferor is therefore only required to keep records of transfers for private use of products with this classification.

#### Requirements for storage of particularly hazardous chemical products

Chapter 2 Sections 3-6 KIFS 2017:7 contain provisions on the storage of chemical products that are hazardous to health or hazardous to the environment. The provisions apply to handling in professional activities, for example at sales outlets. The requirements stipulate that such products must be stored so as to prevent risks to health and the environment, to keep them out of reach of young children and to keep them well separated from products intended to be ingested. Furthermore, particularly hazardous chemical products subject to authorisation requirements must be stored in such a way that unauthorised persons cannot access them.

#### Restriction on corrosive products for cleaning drains

In the mid-1970s, the Decree (1973:334) on Products Hazardous to the Environment and Health introduced a ban on the marketing or transfer of drain cleaning products if the acid content in the product exceeded 10 % by weight or the base (lye) content in liquid form exceeded 2 % by weight. Lye is a common name for aqueous solutions of alkaline chemicals. The term is mainly associated with sodium hydroxide and potassium hydroxide. The ban has been the same since it was introduced and is now contained in Section 15(2) of the Chemical Products (Handling, Import and Export Prohibitions) Ordinance (1998:944) (the Prohibitions Ordinance). The Swedish Chemicals Agency may, in special cases, decide on an exemption from the ban under Section 17 of the Prohibitions Ordinance. In recent years, the Swedish Chemicals Agency has received one or two exemption applications per year. These applications have been rejected in view of the fact that there are other, less risky alternatives to address the problem of clogged drains. In these rejection decisions, examples of alternative methods have been provided such as preventive work and mechanical cleaning with the help of plungers, drain snakes, flushing trucks and with the use of hot water.

The ban relates to corrosive products in liquid form containing certain levels of acid or alkali (lye). Only liquid products used for drain cleaning are covered by the ban. Similar products with other uses fall outside the ban. The concentration limits set out in the provision are, as a rule, below the limit values for classifying a mixture as highly corrosive on the basis of the classification of constituent substances. This means that certain mixtures which are not classified as highly corrosive may be subject to the ban.

### Regulation in other countries

As far as the Swedish Chemicals Agency is aware, there are no provisions or other risk reduction measures regarding blocked pipe dissolvents in other EU countries over and above the requirements of the CLP Regulation. During the project, the project team sent an enquiry to several Member States to ascertain if there were any national risk reduction measures for sodium hydroxide and potassium hydroxide, and only received answers in the negative. The project team also examined the relevant Danish, Norwegian and Finnish legal acts, finding that there were no specific national provisions on blocked pipe dissolvents or sodium hydroxide and potassium hydroxide in these countries either.

The Swedish Chemicals Agency reviewed the regulation of products containing sodium hydroxide and potassium hydroxide in some countries outside the EU: United Kingdom, Australia and Malaysia. Mixtures containing sodium hydroxide and potassium hydroxide were found to be regulated differently in different countries, in addition to labelling and packaging requirements for the products. In Australia[[6]](#footnote-7), it is prohibited to sell, supply and use sodium hydroxide and potassium hydroxide for domestic use as a substance or in mixtures when the pH exceeds 11.5. There are various provisions on storage in sales outlets of products containing sodium hydroxide or potassium hydroxide in both the UK[[7]](#footnote-8) and Australia. In Malaysia[[8]](#footnote-9), however, authorisation is required to sell and buy products with a certain concentration of sodium hydroxide. The seller’s obligation to have authorisation is supplemented by a recordkeeping obligation. There are also licensing requirements for sellers of products with a certain concentration of potassium hydroxide and there is an age limit for buyers of such products.

## Problems associated with blocked pipe dissolvents

### Health risks

#### Hazard characteristics

Chemical blocked pipe dissolvents are often corrosive. The CLP Regulation divides the ‘Corrosive’ category into three subcategories: 1A, 1B and 1C. What distinguishes the hazard categories is that for hazard category 1A the corrosive effect occurs after a maximum of 3 minutes of exposure and short observation (up to 1 hour) compared to 1B (exposure of between 3 minutes and 1 hour and up to 14 days’ observation) and 1C (exposure of over 1 hour to 4 hours and up to 14 days’ observation). Hazard category 1 shall be used when destruction of skin tissue occurs after a maximum of 4 hours’ exposure but the information is otherwise insufficient for division into a subcategory.

Blocked pipe dissolvents on the Swedish market often contain strong alkaline (base) substances such as sodium hydroxide (NaOH, CAS No 1310-73-2) or potassium hydroxide (KOH, CAS No 1310-58-3). These are sometimes called caustic soda or lye. Sodium hydroxide and potassium hydroxide have a harmonised classification as Skin Corrosive category 1A under Annex VI to the CLP Regulation. Chemical products containing 5 % or more of NaOH or KOH, such as many chemical blocked pipe dissolvents, are also classified as Skin Corrosive in category 1A.

Alkali has a corrosive effect by binding to proteins and lipids in the skin and mucous membranes, and forming soap-like compounds. It is the influence on the lipids that cause alkali, unlike acids, to penetrate deep into the tissue and cause tissue death. This process starts immediately upon exposure and can continue for several days if it is not slowed down. The corrosive effect of alkali depends on the exposure time and the state of aggregation, concentration, amount and pH of the substance.

#### Use and exposure

Blocked pipe dissolvents are available in liquid or solid form, such as granules or flakes. They are also available in gel form. In Sweden, alkaline dissolvents are most commonly available in granule form[[9]](#footnote-10). Blocked pipe dissolvents are mainly used by private individuals.

Blocked pipe dissolvents are usually ready for use and do not need to be mixed. The user must measure out the dose of the dissolvent themselves, but a measuring cup is not always supplied with the package. The dissolvent must be carefully poured into the drain to dissolve the blockage. After that, the user must flush the drain with water to rinse away any residue. According to instructions on the packaging, protective gloves and eye protection should be used when treating drains with corrosive dissolvents. It is reasonable to assume that not all consumers will follow the instructions or use the right type of protective equipment correctly. In the event of accidents and improper use, people may be exposed to the dissolvent. The following possible exposure scenarios have been drawn up based on descriptions of incidents from the GIC and conversations with professionals such as plumbers and associated personnel.

Solid dissolvents can cause corrosion injuries when in contact with moist skin or mucous membranes or if the granules are dissolved in water before use. Consumers may be exposed when the granules are poured into the drain or if they come into contact with residue in the measuring cup used. Careless handling when rinsing away residue may result in the dissolvent reacting with hot water and starting to shock boil, which can cause the dissolvent to splash out of the drain. This can cause the user to get dissolvent on their skin or in their eyes. Inhalation exposure can also occur when corrosive substances evaporate in the form of vapour or small drops or in cases where the dissolvent forms dust and the user inhales the dust. When handling waste, for example if the user is cleaning up dissolvent residue or throwing out the packaging, the skin may also be exposed. Exposure can also occur if, after the drain has been treated, the blockage remains and the user continues to try cleaning it, e.g. by disassembling the water trap.

It is not only the user of the dissolvent that can be exposed. Accidents can occur when people in the user’s vicinity happen to come into contact with the product, such as children who try to drink the dissolvent or people using a shower that still has residue in the treated drain. Few professionals[[10]](#footnote-11) reportedly use corrosive blocked pipe dissolvents to clear drains, but they can be exposed if they are hired after cleaning has been carried out by the consumer and the professional has not been informed that there may still be residue in the drain.

#### Health effects

Exposure through ingestion or contact with the mouth can cause swelling or corrosion injuries/burns to the lips, tongue, inside the cheeks, throat, oesophagus and stomach. Exposure to eyes or skin that can occur in the event of splashes and spills causes burns. Inhaling, for example, dust or atomised droplets of alkali poses the risk of high respiratory obstruction and corrosion injuries/burns in the airways. In the event of moderate exposure, alkali dissolves in the moist mucous membranes of the upper airways and does not reach down into the lower and finer branches. Depending on the severity of the injury, medical care and/or observation in hospital may be necessary.

The Swedish Chemicals Agency received case narratives involving alkaline blocked pipe dissolvents from the Poisons Information Centre (GIC). These are reproduced in Annex I of section 7.

### Poisoning incidents involving corrosive blocked pipe dissolvents

This section outlines statistics on poisoning incidents resulting from consumer use of corrosive blocked pipe dissolvents in Sweden.[[11]](#footnote-12) Nine out of ten cases leading to hospitalisation (‘cases entailing a risk’) are accidents.[[12]](#footnote-13) Accidents mainly affect private individuals. Occupational injuries[[13]](#footnote-14) as a result of consumer use of corrosive blocked pipe dissolvents do occur, but are relatively rare[[14]](#footnote-15).

Annually, the Poisons Information Centre (GIC) hotline receives a few hundred enquiries – from private individuals and healthcare professionals – about poisoning incidents related to corrosive blocked pipe dissolvents. In 2021, the number of separate cases involved 405 individuals, which is more than double the figure from 2004 (see Figure 1). The trend of increasing cases involving corrosive blocked pipe dissolvents follows the general trend in the number of calls to the GIC hotline increasing by around 4 per cent per year.[[15]](#footnote-16)

Figure 1. Number of enquiries (separate cases) to the Poisons Information Centre (GIC) on poisoning incidents involving corrosive blocked pipe dissolvents 2004-2021 and the proportion of cases assessed by the GIC to entail a risk.

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| --- | --- |
| Frågor till GIC, enskilda fall | Enquiries to GIC, separate cases |
| Varav enskilda riskabla fall | Of which cases deemed to entail a risk |
| Linear (Frågor till GIC, enskilda fall) | Linear (Enquiries to GIC, separate cases) |
| Linear (Varav enskilda riskabla fall) | Linear (Of which cases deemed to entail a risk) |

When they are contacted, the GIC makes an assessment as to the degree of health risk in the case in question. Cases entailing a risk are defined as cases where the GIC recommends medical care or where the patient is already in hospital, which applies to approximately half (208 out of 405 in 2021) of incidents involving corrosive blocked pipe dissolvents.

In contacts with the GIC, the cleaning agents that prompt the most recommendations to seek medical care are corrosive blocked pipe dissolvents, alongside the bleaching agent hypochlorite.

The GIC categorises all poisoning incidents by route of exposure and the age group of the affected person. Instances of exposure through ingestion, skin and inhalation are approximately equally as common and together account for nearly nine out of ten cases  
(Table 1). The other tenth consists of cases involving eye exposure. In about one fifth of all incidents, children (0-9 years of age) are affected and in these cases it is mainly due to exposure through ingestion.

Table 1. Number of enquiries[[16]](#footnote-17) to the Poisons Information Centre (GIC) concerning poisoning incidents involving corrosive blocked pipe dissolvents, the route of exposure being recorded for different age groups, 2004-2020.

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| --- | --- | --- | --- | --- | --- |
|  | Eyes | Ingestion | Skin | Inhalation | Percentage by age group (%) |
| Number of enquiries per route of exposure | 520 | 1 524 | 1 440 | 1 297 |  |
| Percentage by route of exposure (%) | 11 | 32 | 30 | 27 |  |
| Adults (20+ years, incl. unknown age) | 471 | 678 | 1 304 | 1 233 | 77 |
| Young people (10-19 years old) | 35 | 46 | 41 | 37 | 3 |
| Children (0-9 years old) | 15 | 800 | 95 | 27 | 20 |

It is important to note that not all relevant poisoning incidents necessarily involve contact with the GIC. The GIC states, for example, that eye clinics in many cases do not contact them when they take care of individuals exposed through the eyes. There is no systematised collection of information on eye damage from exposure to corrosive blocked pipe dissolvents. It is estimated that approximately 2-5 cases of eye damage caused by exposure to corrosive blocked pipe dissolvents are treated each year in the Stockholm and Gotland region.[[17]](#footnote-18) The age of those injured varies, but cases most commonly involve middle-aged or younger adults.

#### Circumstances surrounding accidents

According to information[[18]](#footnote-19) from the International Association for Soaps, Detergents and Maintenance Products (AISE), approximately nine out of ten accidents involving adults occur in connection with the regular use of corrosive blocked pipe dissolvents. Examples are accidents associated with the preparation of the dissolvent before use, accidents associated with pouring the dissolvent into the drain and accidents after the dissolvent has been poured into the drain. The same applies to about half of the cases involving children.

The circumstances surrounding the remaining accidents differ: for example accidents related to storage, accidents when the product is left behind after use or cases where the dissolvent has been mistaken for a drink.

#### Severity of poisoning incidents

There are no aggregated statistics on the frequency in Sweden of serious incidents involving corrosive blocked pipe dissolvents.

The Cause of Death Register records a total of 4 deaths due to internal corrosion injuries for the period 2011-2019. The extent to which these fatal injuries are associated with the use of blocked pipe dissolvents is unclear.

Some information on serious cases is available, for example, the case studies report from the GIC (Annex I). Another example that has emerged in the course of this inquiry work is that there is approximately one serious case annually at the St. Erik Eye Hospital in the Stockholm region (corresponding to PSS level 3, see below) as a result of the use of corrosive blocked pipe dissolvents.[[19]](#footnote-20) This indicates there may be a few, perhaps a handful, of cases annually of serious eye injuries related to corrosive blocked pipe dissolvents nationally.

In the absence of aggregated statistics, this section provides a rough estimate of how many of the accidents recorded annually by the GIC fall within the different severity levels. The severity scale used is the PSS (Poisoning Severity Score) which divides the symptoms of incidents into five different levels: (0) none, (1) minor, (2) moderate, or (3) severe, and (4) fatal poisoning. Examples of symptom types that are common in incidents related to corrosive blocked pipe dissolvents and how they are graded according to the PSS are shown in Table 2.[[20]](#footnote-21)

Table 2. Examples of symptoms at different degrees of severity.

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| **Severity (PSS)** | **Type of symptom** |
| **Minor (1)** | Irritation of the windpipe and cough.  Minor corrosion injuries in the oral cavity.  Irritation of the eye, redness of the eye. |
| **Moderate (2)** | Moderate damage to the cornea (abrasion or punctiform damage) of one eye, intense irritation  Moderate damage to the mouth, throat, oesophagus and stomach, moderate dysphagia |
| **Severe (3)** | Severe damage to the cornea (major ulcers or perforation/penetration) of one eye. Permanent visual impairment.  Severe damage to the mouth, throat, oesophagus and stomach including severe dysphagia |

The estimated percentage of incidents leading to the respective degree of severity is based on information from AISE on accidents reported to poisons information centres in five EU countries (including the GIC in Sweden).[[21]](#footnote-22) Two things worth noting about this data are that (i) it only applies to accidents and does not include injuries resulting from suicide attempts or other types of self-harming behaviour; (ii) PSS data is available for a relatively small sample (n=175) of accidents. According to AISE’s review of accidents, 5.4 % of all accidents involving solid alkaline blocked pipe dissolvents (which is the only type permitted for consumer use in Sweden) result in PSS level 2 injuries (moderate), PSS level 3 injuries (severe) or PSS level 4 injuries (fatal). The AISE report does not provide information on the distribution between levels 2, 3 and 4 for solid alkaline blocked pipe dissolvents. However, the distribution between the severity levels of accidents involving all types of blocked pipe dissolvents is provided, with 11 % of reported accidents resulting in moderate injuries (PSS=2), 3 % severe injuries (PSS=3) and 1 % fatal outcomes (PSS=4). Assuming that the severity distribution for PSS levels 2, 3 and 4 does not vary by product type, we can estimate the percentage of all accidents involving solid alkaline blocked pipe dissolvents that lead to the respective PSS level as follows: PSS=2: 4.0 %; PSS=3: 1.1 %; PSS=4: 0.4 %.[[22]](#footnote-23) AISE data on fatal cases (PSS=4) consists of 2 out of a total of 175 observed cases. Given that the base data is minimal, calculations are also made below combining PSS levels 3 and 4, and all these cases are then assumed to belong to PSS=3. For the purposes of this calculation, the assumed percentages are: PSS=2: 4.0 % and PSS=3: 1.4 %.

In 2021, 405 separate enquiries to the GIC concerned corrosive blocked pipe dissolvents (Figure 1). Of these, the GIC assessed 208 to entail a risk. The remaining cases, according to the GIC’s assessment, only caused very mild symptoms or no symptoms at all.

Table 3 below shows two different scenarios (A & B) for the estimated number of annual accidents involving blocked pipe dissolvents in Sweden that cause no, minor, moderate or severe injury injuries or have fatal outcomes. The calculations are based on the number of separate cases in 2021 (Figure 1). For both A and B, the number of cases with no injuries (PSS=0) are those that prompted enquiries to the GIC but were assessed by the GIC as not entailing a risk, and the number of minor cases (PSS=1) has been calculated as the difference between the number of cases assessed by the GIC as entailing a risk and the number of estimated cases at PSS level 2, 3 or 4. Scenario A assumes the respective severity level percentages to be PSS=2: 4.0 %; PSS=3: 1.1 % and PSS=4: 0.4 %, in scenario B the following is assumed instead PSS=2: 4.0 % and PSS=3: 1.4 % and PSS=4: 0. These percentages have been multiplied by the number of all separate cases prompting enquiries to the GIC (Figure 1).

Table 3. Estimated number of annual accidents involving blocked pipe dissolvents per PSS level.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | No symptoms (PSS=0) | Minor symptoms (PSS=1) | Moderate symptoms (PSS=2) | Severe symptoms (PSS=3) | Deaths  (PSS=4) |
| A | 197 | 186 | 16 *(4.0 %)* | 4.4 *(1.1 %)* | 1.5 *(0.4 %)* |
| B | 197 | 186 | 16 *(4.0 %)* | 5.8 *(1.4 %)* | - |

## Measures taken by the industry and the authorities

In addition to existing legislation (see section 2 Applicable law), the industry and Swedish authorities have carried out a number of activities to reduce the risks involved with blocked pipe dissolvents. It is difficult to know what impact these activities have had. However, the number of calls to the Poisons Information Centre (GIC) concerning corrosive blocked pipe dissolvents has continued to increase despite the efforts made so far (see section 3.2, Poisoning incidents involving corrosive blocked pipe dissolvents). We would therefore conclude that the measures have been insufficient.

### Voluntary measures taken by the industry

The International Association for Soaps, Detergents and Maintenance Products (AISE) has initiated voluntary measures to address the risks involving chemical blocked pipe dissolvents. They have published information material on their website containing recommendations for companies that place chemical blocked pipe dissolvents on the market, with the aim of getting consumers to store and use the dissolvents safely[[23]](#footnote-24). AISE has also created a website informing consumers about the safe use of blocked pipe dissolvents and other cleaning products[[24]](#footnote-25).

The Swedish Cosmetics, Toiletries and Detergents Association (KoHF) has also published information about safe handling on its website, which is aimed at users of blocked pipe dissolvents[[25]](#footnote-26).

### Information initiatives by authorities

The Swedish Chemicals Agency and the GIC have published information on their websites aimed at reducing the risks surrounding blocked pipe dissolvents[[26]](#footnote-27). The Swedish Chemicals Agency, the GIC and the Work Environment Authority have also jointly developed the brochure ‘Varning för frätande propplösare’ (‘Warning about corrosive blocked pipe dissolvents’)[[27]](#footnote-28). When analysing visitor statistics and page views for the Swedish Chemicals Agency’s webpages, we can see that the information brochure was downloaded 30 times in 2019 and 18 times in 2020. In 2021, no one downloaded the brochure. The pages containing information about blocked pipe dissolvents had an average of about 700 unique visitors per year over the last 3 years. A visitor spends an average of 2 minutes reading the information on the page.

In episode 5 of the Swedish Chemicals Agency’s podcast ‘Kemikaliepodden’ on chemicals in the everyday environment of children, we talked about, among other things, blocked pipe dissolvents and how consumers can protect children better[[28]](#footnote-29). The podcast has been downloaded 4 244 times since it was published in May 2017. Most downloads were made in the months after it was released and monthly downloads then dropped to an average of around 30 downloads per month in 2020-2021.

The educational tool Hannashus.se[[29]](#footnote-30) (Hanna’s house) has been developed in collaboration between the Swedish Chemicals Agency, other Nordic authorities and the Nordic Council of Ministers. Hannashus.se provides information about the hazard symbols on common chemical products and can be used in school education. The website contains, among other things, nine situations in Hanna’s house, one of which is about Hanna’s aunt clearing the drain in the shower with a corrosive blocked pipe dissolvent. There are more visits to the Hanna’s house website, and we can assume that the educational material is used primarily for educational purposes as the frequency of visits goes down during June and July. The number of unique visitors who visit the information page each year about the risks involving blocked pipe dissolvents at Hanna’s house has gone from approx. 19 000 in 2019 to 8 000 in 2021. The average time each visitor spends on the page is about 20 seconds.

## Regulation options

Possible instruments that have been evaluated by the Swedish Chemicals Agency with a view to reducing accidents involving corrosive blocked pipe dissolvents are:

* introducing an EU ban on selling blocked pipe dissolvents classified as Skin Corrosive in hazard category 1/1A/1B/1C to consumers;
* amending the exemption in Chapter 4 Section 3 KIFS 2017:7 and thus introducing requirements for national authorisation in order to:

1. handle in a non-professional capacity blocked pipe dissolvents classified as Skin Corrosive in hazard category 1A containing sodium hydroxide and potassium hydroxide; and/or
2. transfer such dissolvents in a professional capacity.

* effecting a national ban on the sale to consumers of blocked pipe dissolvents classified as Skin Corrosive in hazard category 1 or category 1A, B, C;
* effecting the introduction of a limit value/ban on blocked pipe dissolvents in national restriction rules, regardless of the form of preparation;
* introducing national conditions of sale so that only purchases over the counter are permitted, i.e. a ban on self-service or special storage provisions.

### Conditions of EU law

Under Article 4(2) of the Treaty on the Functioning of the European Union (TFEU), the Union has shared competence with the Member States in, inter alia, the field of environment and consumer protection. According to Article 2(2) TFEU, Member States may legislate and adopt legally binding acts in this area to the extent that the Union has not exercised its competence. Whether there is scope for the introduction of national provisions on sodium hydroxide and potassium hydroxide or other substances in blocked pipe dissolvents – meaning that these products are classified as Skin Corrosive in hazard classes 1, 1A, 1B or 1C – thus depends on whether there are already common EU rules in this area and the extent to which these rules allow national rules. Where common rules exist, the legal basis of the rules in the EU Treaties is the starting point for determining the extent to which national provisions in this area are allowed. In addition to the legal basis of the common rules, national room for manoeuvre must also be assessed in relation to the context of the EU rules and the objectives pursued by them. The REACH Regulation[[30]](#footnote-31) and the Detergents Regulation[[31]](#footnote-32) contain common EU rules in the field of the environment that could affect the possibility of introducing national provisions on blocked pipe dissolvents. In the absence of any impediment to national provisions contained in those acts, it is necessary to examine the compatibility of such provisions with the requirements of Articles 34 and 36 TFEU relating to the free movement of goods, the prohibition of quantitative restrictions on imports and measures having equivalent effect.

Provisions in EU legal acts on, for example, how products are to be presented and stored in shops, bans on self-service when purchasing such products, and the requirement that certain information must be provided when selling such products would constitute conditions of sale for these products. The main purpose of such provisions would be to signal that the products have certain hazard characteristics and to make it easier for staff to provide information to the consumer about these hazard characteristics.

#### REACH Regulation

The REACH Regulation was adopted with Article 114 TFEU as the legal basis, which means that the Regulation has a fully harmonising effect. As a starting point, Member States may not therefore introduce stricter national rules. Article 128(1) of the REACH Regulation also provides that Member States may not prohibit, restrict or impede the manufacture, import, placing on the market or use of a substance, on its own or in a mixture. This means, for example, that Member States may not tighten the prohibitions and restrictions already in force under Annex XVII of the REACH Regulation, as specified by the Court of Justice in the Lapin case[[32]](#footnote-33). However, it is expressly stated in Article 128(2) of the REACH Regulation that nothing in that Regulation shall prevent individual Member States from laying down national rules to protect human health in cases where the REACH Regulation does not harmonise the requirements on manufacture, placing on the market or use.

Another, stricter interpretation of the REACH Regulation would mean that a Member State that takes a national measure also needs to initiate a restrictions procedure through the REACH Regulation. Article 69(4) of the REACH Regulation provides that if a Member State considers that the manufacture, placing on the market or use of a substance on its own, in a mixture or in an article poses a risk to human health or the environment that is not adequately controlled and needs to be addressed, it shall inform the Agency that it proposes to prepare a dossier which conforms to the requirements of the relevant sections of Annex XV[[33]](#footnote-34).

As regards national conditions of sale, the provisions of the REACH Regulation mainly regulate issues of market access and the use of individual substances. The REACH Regulation does not contain any rules requiring authorisation for activities that involve the transfer of hazardous chemical products. There are also no provisions on the storage of chemical products such as sodium hydroxide and potassium hydroxide or any other aspects of the way in which such chemical products are to be sold. Thus, the REACH Regulation does not prevent the introduction of national provisions imposing requirements on activities that involve the transfer of particularly hazardous chemical products, or other provisions on conditions of sale that have now been analysed.

#### Detergents Regulation

The Detergents Regulation contains requirements for detergents. Substances or mixtures intended for washing and cleaning processes are considered to be detergents under Article 2(1) of the Detergents Regulation. The term ‘cleaning’ refers to a process by which an undesirable deposit is dislodged from a substrate or from within a substrate and brought into a state of solution or dispersion (Article 2(3)). Dislodging a grease blockage from the inside of a pipe by having it dissolved using a corrosive blocked pipe dissolvent should therefore be seen as such a process, as should the use of such a product for maintenance purposes. Therefore, blocked pipe dissolvents should generally be regarded as detergents as defined in the Detergents Regulation.

According to Article 3(1) of the Detergents Regulation, detergents shall conform with the conditions, characteristics and limits set out in that Regulation and with any other relevant EU legislation.

Article 14 provides that Member States shall not prohibit, restrict or impede the making available on the market of detergents which comply with the requirements of the Detergents Regulation, on grounds that are dealt with in the Regulation. There is therefore no room for the introduction of bans or restrictions for blocked pipe dissolvents at national level insofar as the Detergents Regulation imposes requirements on such products.

The purpose of the Detergents Regulation is to achieve the free movement of detergents and surfactants for detergents in the single market while, at the same time, ensuring a high degree of protection of the environment and human health, as stated in Article 1(1) of the Regulation.

The scope of the Detergents Regulation is set out in Article 1(2), which provides that the following rules for the placing on the market are harmonised in order to achieve the objectives of the Regulation:

* the biodegradability of surfactants in detergents;
* restrictions or bans on surfactants on grounds of biodegradability;
* the additional labelling of detergents;
* the information that manufacturers must hold at the disposal of competent authorities and medical personnel;
* limitations on the content of phosphates and phosphorous compounds in consumer laundry detergents and consumer automatic dishwasher detergents.

The Regulation does not, however, contain any restrictions on the content of skin corrosive substances in detergents. Nor are there any other specific provisions on sodium hydroxide or potassium hydroxide or substances classified as skin corrosive in category 1, 1A, 1B or 1C. The Swedish Chemicals Agency therefore takes the view that the Detergents Regulation does not preclude national bans or restrictions on sodium hydroxide, potassium hydroxide and other substances classified as skin corrosive in category 1, 1A, 1B or 1C in blocked pipe dissolvents.

Nor are there any specific provisions on the storage of detergents or other conditions of sale. The Detergents Regulation cannot therefore be regarded as precluding the adoption of national provisions laying down specific conditions of sale for sodium hydroxide, potassium hydroxide and other substances classified as skin corrosive in category 1, 1A, 1B or 1C in blocked pipe dissolvents.

#### Treaty on the Functioning of the European Union

The main provisions of primary law that are relevant when assessing whether a restriction in the field of chemicals is in conformity with the Treaty are the provisions on free movement of the Treaty on the Functioning of the European Union (TFEU). Under Article 34 TFEU, quantitative restrictions on imports (e.g. import bans, quota systems or requirements for import licences), or measures having equivalent effect, are generally prohibited. The term ‘measures having equivalent effect’ means any measure which is capable of hindering, directly or indirectly, actually or potentially, trade between the Member States. As a general rule, such measures are not permitted if they apply to goods lawfully manufactured and sold in other Member States. Article 36 TFEU provides for a number of grounds for derogation from Article 34. Prohibitions and restrictions on imports may be permitted, inter alia, on the grounds of the protection of health and life of humans and animals. In the absence of harmonising rules, a Member State may itself decide on the level of protection of human life and health.[[34]](#footnote-35) However, such measures must have a legitimate aim and be proportionate. It is the Member State that wishes to introduce national restrictions which also bears the burden of proving compliance with these requirements.

Therefore, in order to introduce a proposed national measure which hinders trade, the Member State needs to demonstrate that the measure does not go beyond what is necessary to achieve its objective, i.e. that the measure is proportionate.[[35]](#footnote-36) If the same result can be achieved with measures that hinder trade to a lesser degree, the measure is generally not considered proportionate.

The assessment must also take into account the precautionary principle. The principle leaves room for action to protect the environment or human, animal and plant health even if there is scientific uncertainty as to the risks posed by the activities. The principle has been clarified, inter alia, by the European Commission’s Communication on the precautionary principle[[36]](#footnote-37).

Conditions of sale in the form of requirements relating to the way in which a product is stored in shops, a ban of self-service when purchasing such products, the requirement to provide certain information when selling such products and the need for transfer authorisation do not, in themselves, impose any requirements on the substances or products that fall within the scope of those rules, nor do they distinguish between domestic products or products originating in another Member State. Therefore, according to the case-law of the Court of Justice of the European Union, such rules do not fall within the scope of Article 34 TFEU, which prohibits quantitative restrictions on imports and measures having equivalent effect.[[37]](#footnote-38) However, the provisions must be necessary and proportionate to their purpose and be designed in such a way that they do not discriminate between domestic products and products from other EU countries.

An authorisation requirement for consumer use cannot, however, be regarded as a condition of sale but may, as a starting point, be regarded as a measure falling within the scope of Article 34. This has been confirmed by the Court of Justice of the European Union, which in several judgments examined the issue of restrictions of use in the Member States and how they relate to the provisions on the free movement of goods.[[38]](#footnote-39)

### Conclusion from the legal conditions for different instruments

There are different ways of interpreting national restrictions and bans with respect to the harmonising effect of the REACH Regulation. However, as stated below in section 5.3.1, the assessment of the Swedish Chemicals Agency is that the problems caused by the products in question are to a large extent limited to Sweden. In the rest of the EU, other types of blocked pipe dissolvents with different chemical compositions are used. Therefore, with our knowledge as it stands, there is no basis for developing a ban at EU level on blocked pipe dissolvents containing potassium hydroxide and sodium hydroxide. Irrespective of the assessment of the harmonising effect of the REACH Regulation, the Swedish Chemicals Agency considers that in these circumstances, the REACH Regulation does not preclude regulating the issue at national level, since EU regulation must be based on the existence of issues that need to be addressed at EU level.

The Swedish Chemicals Agency also considers that the Detergents Regulation does not contain any provisions that prevent national regulation of the products in question.

As regards conditions of sale, there are no explicit provisions on conditions of sale for substances with these classifications in either the REACH Regulation or the Detergents Regulation. The REACH Regulation mainly regulates issues of market access and the use of individual substances. The Detergents Regulation mainly contains provisions on the labelling and restriction of certain groups of substances. Thus, conditions of sale, e.g. relating to the storage of a chemical product in the shop, concern matters other than those governed by the provisions of the REACH and Detergent Regulations. In the absence of harmonised rules on conditions of sale for blocked pipe dissolvents or corrosive constituent substances, proposals for such national rules shall be assessed on the basis of the provisions of the TFEU on the free movement of goods. Moreover, national conditions of sale are not regarded to be a quantitative restriction on imports or as a measure having equivalent effect under the provisions of the TFEU.

The assessment of the Swedish Chemicals Agency is therefore that EU law does not preclude the introduction of national conditions of sale for sodium hydroxide, potassium hydroxide and other substances classified as Skin Corrosive in category 1, 1A, 1B or 1C in blocked pipe dissolvents.

However, as regards national authorisation requirements for consumer use of blocked pipe dissolvents, the assessment of the Swedish Chemicals Agency is that such requirements do not constitute conditions of sale which, in line with above-mentioned practices, are excluded from the scope of Article 34 TFEU. Instead, they must be regarded as measures having equivalent effect to quantitative restrictions on imports. Such requirements must therefore be justified under Article 36 TFEU.

### Evaluated instruments

In the course of developing the draft instrument, other authorities and the industry were consulted. These interactions are described in Annex II.

#### Restriction at EU level

The Swedish Chemicals Agency has the option of proposing a restriction within the framework of the REACH Regulation or the Detergents Regulation. If a restriction on corrosive blocked pipe dissolvents were introduced at EU level, such as a ban on selling blocked pipe dissolvents to consumers, this would provide a high level of protection for users, children and others who could be exposed, for example, plumbers and associated personnel. Such a restriction would apply in all EU Member States, not hindering the free movement of goods on the EU market.

As part of an RMOA[[39]](#footnote-40) in 2015, the Swedish Chemicals Agency analysed appropriate risk management measures for blocked pipe dissolvents used by consumers at EU level[[40]](#footnote-41). As there were uncertainties as to whether an EU-wide restriction on use or conditions on use would control risks in a proportionate manner, the Swedish Chemicals Agency proposed in the final report that voluntary measures by the International Association for Soaps, Detergents and Maintenance Products (AISE) and its member organisations were the most appropriate risk management measure, at least in the short term.

In order for a proposed restriction at EU level to be adopted, existence of a risk at EU level needs to be established. There is currently no indication of a risk in other EU countries that would justify regulatory measures on alkaline blocked pipe dissolvents at EU level. No other EU country responding to our enquiry indicated that poisoning incidents involving corrosive blocked pipe dissolvents were a growing problem (see section 1). The EU countries that responded to our enquiry also had a significantly lower number of reported incidents per capita than Sweden. However, in Norway (which is covered by the relevant legislation through its EEA membership), an increasing trend in incidents involving liquid blocked pipe dissolvents was reported. Another factor against measures at EU level at present is that the types of corrosive blocked pipe dissolvents used vary considerably between Member States. Acid-based dissolvents and/or dissolvents in liquid form are common. The Swedish market differs from most of the other EU countries in the sense that it is mainly alkaline dissolvents in solid form that are available.

Any proposal for a restriction at EU level should be preceded by an updated RMOA as this would give the Swedish Chemicals Agency an opportunity to seek comments and request more information from other Member States.

#### National regulation — Authorisation obligation or restriction

##### Authorisation to handle and/or transfer in a professional capacity blocked pipe dissolvents containing sodium hydroxide and potassium hydroxide

An authorisation requirement for handling blocked pipe dissolvents means that consumers who are to buy and handle dissolvents classified as Skin Corrosive in hazard category 1A need to apply for and be granted authorisation by the county administrative board. Such an authorisation requirement is combined with a requirement that products may only be transferred to authorised consumers. Furthermore, the transferor of these products needs to record certain sales information, namely:

1. the date of sale;

2. product name and quantity;

3. the name or business name and address of the buyer;

4. whether the product has been transferred for professional handling or for handling (private use) that requires authorisation pursuant to Section 7(1) of the Chemical Products Ordinance. In the latter case, information is to be kept on how the buyer has demonstrated their eligibility.

Furthermore, as a result of the authorisation requirement, products in the case of professional handling, such as when a retailer stores a product at the sales outlet, must, in accordance with Chapter 2 Section 6 KIFS 2017:7, be stored in such a way that unauthorised persons cannot access them. Unauthorised persons here means persons who do not have authorisation to buy and use the products. As regards the authorisation procedure for private individuals, authorisation may only be granted to those who have reached the age of 18 and who need the products for an artistic, technical, scientific or similar purpose. What is meant by the above purposes has been interpreted relatively liberally in its application, but it is not the case that any purpose whatsoever can be interpreted to fall under such purposes. The assessment of the Swedish Chemicals Agency is that the use of blocked pipe dissolvents to manage blockages in drains is a technical purpose for which authorisation can be granted.

One possible problem is that the exemptions in KIFS 2017:7 address all types of products containing sodium hydroxide or potassium hydroxide. Removing blocked pipe dissolvents means that other products are still covered by the exemption (e.g. oven cleaning and deck cleaning products) which may contain the same substances as blocked pipe dissolvents. Only removing blocked pipe dissolvents from the exemption may mean that the use of ‘universal lye’ may increase, i.e. products that are not specifically marketed as blocked pipe dissolvents but which can also be used.

Another option is to amend the provision in such a way that those who professionally transfer blocked pipe dissolvents containing sodium hydroxide or potassium hydroxide that are classified as Skin Corrosive in hazard category 1A need authorisation to do so, but in such a way that consumers do not need to have authorisation to buy and use the products. However, this measure cannot be expected to sufficiently reduce the risk of injury. In addition, the Swedish Chemicals Agency exempted the professional transfer of products classified in the relevant hazard class and category in 2017. The reason for this was that it meant a reduction in administration and costs for companies, county administrative boards and municipalities, without any expected increase in risk of injury. Against this background, proceeding with this option of authorisation requirements for professional transfer is not considered appropriate.

##### Limit values for base (lye) in drain cleaners

Under Section 15(2) of the Prohibitions Ordinance, products for cleaning drains may not be marketed or transferred if the acid content of the product exceeds 10 % by weight or the base (lye) content in liquid form exceeds 2 % by weight. An alternative instrument is to introduce limit values in the Prohibitions Ordinance for alkali (base) in drain cleaners, including in solid form.

It is alkaline blocked pipe dissolvents in solid form (granules) that cause the majority of severe injuries. The reason for this is presumed to be that the current regulation on limit values for acid and alkali in liquid form has led to the presence mainly of alkaline dissolvents in solid form on the Swedish market. In many other EU countries, blocked pipe dissolvents are mainly available in liquid form, such as acid.

However, introducing limit values also for solid alkaline dissolvents would require it to be possible to assess the content level at which a product is effective and how high the limit value should be in order to reduce the risk of injury to humans. In consultation with the International Association for Soaps, Detergents and Maintenance Products (AISE) and the Swedish Cosmetics, Toiletries and Detergents Association (KoHF), the trade associations explained that it was difficult to assess when a product becomes effective and to identify any benefit in terms of the risk of injury that a limit value would have. This is because the effect of a product is a complex issue which depends, inter alia, on the rest of its composition and degrees of effectiveness are better stated as a concentration range rather than a certain percentage.

The assessment of the Swedish Chemicals Agency is therefore that it is not possible to establish an appropriate limit level for alkaline blocked pipe dissolvents in solid form. Against this background, the introduction of a limit level for alkali (lye) in drain cleaners would not be an effective measure nor would it provide a solution to the problem of injury caused by blocked pipe dissolvents. There is also a need for clearer definitions of the terms acid and alkali (lye).

##### Ban on supplying drain cleaners in certain classifications to consumers and on consumers handling such products

One possible instrument is to introduce a ban on supplying drain cleaners in certain classifications to consumers. The ban could also be worded in such a way as to prohibit consumers from handling such drain cleaners. Such a proposal can be expected to bring about a change in the market and reduce injuries. The proposal constitutes a barrier to trade but can probably be justified on the grounds of protection of human health and the expected impact of the measure. Moreover, the fact that accidents in Sweden are largely due to different types of products compared to many other EU countries would support the introduction of a national restriction.

#### Conditions of sale: storage at the sales outlet and ban on self-service

Currently, the Swedish Chemicals Agency’s regulations stipulate that particularly hazardous chemical products which are subject to authorisation requirements and are handled professionally (i.e. when selling, for example) are to be stored in such a way that unauthorised persons cannot access them (Chapter 2 Section 6 KIFS 2017:7). Unauthorised persons are persons who have not applied for and not been granted authorisation to handle the products.

The Swedish Civil Contingencies Agency (MSB) also has provisions on the storage of certain chemical products at sales outlets. Flammable gas and liquid shall be handled in a safe manner at sales outlets, which, according to the general advice, can be done, inter alia, through separate rooms where only flammable goods are stored or storage of the products in fire-stopping display cabinets (National Inspectorate of Explosives and Flammables’ Regulations (SÄIFS 1996:2) on the Handling of Flammable Gases and Liquids at Sales Outlets).

Another option is to stipulate that certain products may only be sold over the counter in physical stores. The means that the product is stored behind the checkout or in another way so that it cannot be picked up by the customer; instead the cashier has to hand it over to the customer. There is a similar provision concerning the presentation of certain OTC products in Section 8 of the Medical Products Agency’s Regulations (LVFS 2009:20) on Trade in Certain OTC products. It states that the medicinal products must be kept locked up or under direct supervision by staff at the sales outlet. Direct supervision means that a staff member continuously monitors the medicinal products. A guide to the regulations indicates that the medicinal products may, for example, be stored in locked cabinets so that the customer must ask the staff to take out the medicinal product, or behind the checkout so that the medicinal product cannot be picked up by the customer (Medical Products Agency, 2020).

Similar provisions also apply to the sale of fireworks. As a general rule, fireworks must be stored in storage units that meet special requirements, but may be stored in other ways at the sales outlet if the goods are under constant supervision and can only be accessed by sales staff (Chapter 9 Sections 1 and 35 of the Swedish Civil Contingencies Agency’s Regulations (MSBFS 2019:1) on the Handling of Explosives).

The Swedish Chemicals Agency is authorised to introduce such handling provisions, since Section 25 point 13 of the Chemical Products Ordinance allows the Swedish Chemicals Agency to lay down requirements for authorisation or special conditions for handling, importing and exporting chemical products, biotechnological organisms and goods, where such requirements, in addition to the provisions of points 1-12 of the same Section, are needed from the point of view of health or environmental protection. However, the introduction of a rule on storage or over-the-counter sales cannot be expected to have any impact on e-commerce where the goods are delivered (and do not have to be picked up in store), as the intended signal to be sent by the product being stored in a particular way or under the supervision of staff is not relevant in this case. E-commerce is expected to increase in the future and it is appropriate to introduce provisions that affect e-commerce and physical trade equally. The industry estimates that low volumes are sold via e-commerce.

### Conclusion from evaluation of instruments and proposed measure

In this section, the regulatory options are analysed and the Swedish Chemicals Agency outlines the instrument it considers to be the most effective option for managing the risks involving corrosive blocked pipe dissolvents.

As explained above, use of blocked pipe dissolvents poses a recognised risk of severe harm to human health.

A restriction at EU level would be effective from a risk reduction perspective and at the same time beneficial from a business perspective, harmonising rules in the single market. In order for a proposed restriction at EU level to be adopted, however, existence of a risk at EU level would need to be established. There is currently no indication of a risk in other EU countries that would justify regulatory measures on alkaline blocked pipe dissolvents in solid form at EU level. Our assessment is therefore that this is not a possible measure.

Nor is there any justification for less restrictive measures, such as requirements to provide information or conditions of sale. Measures related to sales would lead to increased costs for companies without any significant risk reduction[[41]](#footnote-42). From a business perspective, this is also negative because the rules are not harmonised in the single market. The measure is considered to have lower potential for reducing risk than bans at EU or national level.

Changes to packaging solutions or supplementary protective equipment in packaging are not considered to be possible instruments for risk reduction and we therefore rejected those options in the inquiry. Furthermore, it is apparent that the consumer information initiatives carried out so far (see section 4) have not had the desired effect. Our assessment is that information initiatives are not a sufficient measure for risk reduction.

To address the problem, the following options remain: national ban or authorisation requirement for consumer use of corrosive blocked pipe dissolvents. A national ban on selling corrosive blocked pipe dissolvents to private individuals has significant potential to reduce risk on the Swedish market. An authorisation requirement is likely to eliminate most use, mainly due to the cost and administration of applying for authorisation. The measure has significant potential to reduce risk on the Swedish market. However, estimating more precisely the extent to which such use will be reduced is not possible. From a business perspective, an authorisation requirement is also negative because the rules are not harmonised in the single market. At the same time, the authorisation procedure provides some scope for continued use of the products, compared to a national restriction.

One aspect to consider here is that current Swedish authorisation rules include an authorisation obligation for private individuals to handle other products classified as Skin Corrosive in category 1A. The introduction of an authorisation obligation for the private handling of blocked pipe dissolvents containing sodium hydroxide and potassium hydroxide would put these on an equal footing with other equally corrosive consumer products that are subject to authorisation requirements.

The assessment of the Swedish Chemicals Agency is that an authorisation requirement has certain advantages over a ban, since an authorisation requirement means it is possible for consumers to apply for authorisation to use the products if this is necessary for any reason. The measure is therefore considered to be less restrictive from an EU perspective, since the impact on free movement can be expected to be slightly smaller compared to a national restriction. Restrictions with the possibility of exemption have been deemed to be more proportionate than outright restrictions[[42]](#footnote-43). Overall, the authorisation requirement is therefore considered to be a proportionate measure that reduces the use of the products and hence the risks, while allowing continued use of the products in some cases.

## Impact assessment

### Baseline scenario

The baseline scenario describes the situation that will continue if no changes are made to the rules.

In Sweden, (as mentioned in section 3.1.2), alkaline blocked pipe dissolvents dominate the market (sodium hydroxide, NaOH and potassium hydroxide, KOH). Sales volumes have decreased continuously since (at least) 2005. In the baseline scenario, however, we have assumed that annual volumes and sales values remain at the level they were when the analysis was carried out (data reported for 2019). This may mean an overestimation of future volumes and sales values.

The number of poisoning incidents has been assumed to remain at the levels observed for 2021. This may be an underestimation as the trend has been a continuous increase in incidents over the nearly 20 years for which we have compiled data.

#### Socio-economic costs of poisoning incidents

Section 3.2.2 estimated the number of cases by degree of severity (according to the Poisoning Severity Score, PSS[[43]](#footnote-44)) and year due to incidents related to blocked pipe dissolvents in Sweden. Based on this and an estimation of the socio-economic costs per case, the total socio-economic costs per year of poisoning incidents involving corrosive blocked pipe dissolvents are calculated below.

Table 4 shows costs per case for incidents of different severity. For a detailed description of the assumptions underlying the cost estimates, see Annex III.

Table 4. Estimated costs per case for the respective PSS level (SEK/case)

|  |  |
| --- | --- |
| Degree of severity (PSS level) | Estimated cost, SEK per case |
| No symptoms (0) | 0 |
| Minor symptoms (1) | 7 000 - 10 000 |
| Moderate symptoms (2) | 70 000 - 90 000 |
| Severe symptoms (3) | 500 000 - 3 000 000 |
| Fatalities (4) | 46 000 000 |

The annual total socio-economic costs of poisoning incidents are estimated at SEK 5.3-83.5 million (Table 5). The main reason for the wide range in the estimated costs is the uncertainty about the prevalence of fatalities. Uncertainties surrounding the costs per case of severe symptoms also contribute (to a slightly lesser degree) to the wide range.

Table 5. Estimate of total socio-economic costs per year of poisoning incidents involving corrosive blocked pipe dissolvents in two different scenarios, A and B (SEK million/year)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Minor (1) | Moderate (2) | Severe (3) | Fatal (4) | *Total* |
| A\* | 1.3 - 1.9 | 1.1 - 1.4 | 2.2 - 13.1 | 67.1 | *71.7 - 83.5* |
| B\* | 1.3 - 1.9 | 1.1 - 1.4 | 2.9 - 17.5 |  | *5.3 - 20.8* |

\*Scenarios A and B differ only in terms of the assumed number of severe and lethal cases; see Table 3 in section 3.2.2.

#### The market for blocked pipe dissolvents

Corrosive blocked pipe dissolvents are easy to access and are available for sale in grocery stores, DIY stores and other retail outlets. Blocked pipe dissolvents can be bought from grocery stores online along with cleaning products and food.

The Swedish Chemicals Agency’s Product Register (2019) contains 78 products registered under the category of drain cleaning products. The products are sold by 41 companies. Of the 78 products, 22 contain NaOH and 6 contain KOH (of which 12 and 4, respectively, are for sale to consumers).

Volumes recorded (in 2019) of blocked pipe dissolvents in the drain cleaner and detergent categories amount to approximately 317 tonnes for sodium-based and 32 tonnes respectively for potassium hydroxide-based dissolvents. In total, about 350 tonnes of corrosive blocked pipe dissolvents are recorded in the Product Register.

The amount of NaOH and KOH recorded under the drain cleaner category in the Product Register has decreased over time since 2004 with some ups and downs during the period. In 2004, 430 tonnes were recorded and in 2019 308 tonnes were recorded in the drain cleaner category[[44]](#footnote-45).

Figure 2. Tonnes of blocked pipe dissolvent (NaOH and KOH) to consumers in the drain cleaner category, 2004-2015, 2019.

Source: Product Register.

##### Retail sale of blocked pipe dissolvents to consumers

The most common blocked pipe dissolvents recorded in the Product Register are available to private individuals as consumers in the retail sector.

* Product X, (NaOH granules), is sold in a 500-gram pack. One pack costs between SEK 23-50 depending on the place of purchase, giving a price for comparison purposes of SEK 46-100/kg incl. VAT. One pack reportedly dissolves 10 blockages, so the average cost per dissolved blockage is approximately SEK 2.30 to 5.
* Product Y, (NaOH granules), is also sold in a 500-gram pack. One pack costs between SEK 23-46 depending on the place of purchase, giving a price for comparison purposes of SEK 46-92/kg incl. VAT. One pack reportedly dissolves 10 blockages, so the average cost per dissolved blockage is approximately SEK 2.30 to 4.60.
* Product Z, (KOH granules), is sold in a 500-ml pack. One pack costs about SEK 100, giving a price for comparison purposes of SEK 200/l incl. VAT. One pack reportedly dissolves about 2 blockages (one dose is 2 dl), giving an average cost of SEK 50 per dissolved blockage.

Assuming that each kg of NaOH and KOH product recorded in the Product Register under the drain cleaner and detergent categories[[45]](#footnote-46) is for the purpose of dissolving blockages, we can calculate a sales value. The market value of the products is based on in-store prices for comparison;

* Sodium hydroxide-based products X and Y are sold in 500-gram packs and cost about SEK 25, or about SEK 50/kg for comparison purposes and
* Potassium hydroxide-based product Z is sold in a 500-ml pack and costs about SEK 100, or about SEK 200kr/l. for comparison purposes.

This gives a sales value of SEK 15 850 000 (317 000\*50) for the sodium hydroxide-based dissolvents and SEK 6 400 000 (32 000\*200) for the potassium hydroxide-based dissolvents. The total annual sales value for blocked pipe dissolvents therefore amounts to an estimated SEK 22 250 000. The total sales value excluding VAT is SEK 17 800 000.

##### Different alternatives for resolving drain blockages

A distinction must be made between different degrees of blockage in drains. In the case of simpler blockages, where water drains away slowly, there are various options for preventing a proper blockage. Disassembling the pipes and cleaning the water traps is one way to reduce the risk of blockage and increase water flow without using corrosive chemicals. Mechanical methods can also be used to stop hair or skin getting into the pipes, such as hair catchers or filters, and it is also possible to prevent blockages using biological enzymes. Plumbing snakes and plungers can also be helpful to resolve blockages. The property manager or a plumber can also be called out, who have tools and equipment for clearing drains over and above those available to a private individual[[46]](#footnote-47).

Consumers have several options to choose from other than corrosive blocked pipe dissolvents to resolve blockages. These options are described in Figure 3 below.

Figure 3. Options for consumers to prevent or resolve blocked drains.

Below are prices for mechanical and preventive methods for resolving blockages**[[47]](#footnote-48)**.

* Drain and pipe cleaners and drain snakes can be inserted into the pipes to clear or dislodge blockages. These products cost about SEK 180 and SEK 55, respectively.
* Plungers create a vacuum in the sink, basin, toilet or shower and resolve blockages in drains together with hot water. A plunger costs about SEK 50 retail. A variant of the plunger is a drain pump that costs between SEK 160-300.
* Hair catcher, a steel wire with a brush on it which is mounted at the mouth of the drain in the sink to catch hair and smaller particles that otherwise get stuck in the water trap. This product costs about SEK 70 retail and is sold in packs of 2. Approximately 16 000 packs[[48]](#footnote-49), i.e. 32 000 hair catchers, are sold each year.
* A floor drain filter is a filter installed in the shower floor that catches hair and other things before such get stuck in the water trap. A floor drain filter costs about SEK 30 retail and is sold in packs of 2. The company sells about 100 000 packs, i.e. 200 000 floor drain filters per year[[49]](#footnote-50).
* Examples of non-corrosive drain unblockers are dishwashing detergent and hot water, but there are also other products on the market.
* A flushing truck service costs about SEK 1 900-2 300 and the results last five to six years.

The above mechanical cleaning products entail a one-off purchase cost but can be used for many years, unlike a corrosive blocked pipe dissolvent which, depending on the brand or packaging, has two to ten applications per pack purchased.

The price of the alternatives to corrosive blocked pipe dissolvent varies from SEK 30 to 300 in comparison to a corrosive blocked pipe dissolvent (cost per dissolved blockage varies between SEK 3.55 for NaOH and SEK 50 for KOH). One pack of blocked pipe dissolvent resolves between 2 and 10 blockages and a mechanical alternative, such as a plunger, lasts for several years. Our assessment is that the cost per use is approximately equivalent between the corrosive blocked pipe dissolvent and the mechanical alternatives.

#### Costs for property owners and property managers

Property owners and property managers have stated that the use of corrosive blocked pipe dissolvents can have negative consequences for their properties. Problems arise when corrosive blocked pipe dissolvents do not resolve the blockage, but instead move it further into the piping system. There, the blockage solidifies and becomes cement-like and greater effort may be needed to get rid of it compared to if methods other than corrosive blocked pipe dissolvents had been used in the first place. Damage to pipes and gaskets can also be caused by blocked pipe dissolvents. For this reason, a number of property owners have banned their residents from using blocked pipe dissolvents[[50]](#footnote-51) and several recommend manual cleaning of the water trap[[51]](#footnote-52). The plumbing industry outlines the same problems, with the risk of damage to pipes and possible deposits of lye due to the use of corrosive blocked pipe dissolvents (see Annex II).

According to the property management company EFS AB, about 95 per cent of drain blockages can be resolved by the consumer themselves using a simple drain pump, the remaining 5 per cent of blockages requiring a flushing truck[[52]](#footnote-53). The number of blockages that move and get stuck further in the pipe system has not been ascertained, nor has the cost[[53]](#footnote-54) of this type of property damage.

### Consequences of the proposal

#### Impact on consumers

Under the draft amendments to the rules, authorisation is required for private individuals to use corrosive blocked pipe dissolvents. The cost of applying to the county administrative boards for such authorisation is SEK 870. The county administrative boards have a statutory processing time of eight weeks. Our assessment is that very few individuals will want to absorb the costs associated with the authorisation process in terms of time and money and that, as a result of the draft amendments, consumers who currently use corrosive blocked pipe dissolvents will choose to use other options for resolving blockages.

Alternatives to corrosive blocked pipe dissolvents are listed under the baseline scenario. The price of these products varies between SEK 30 and 300. The cost per dissolved blockage using corrosive blocked pipe dissolvents varies between an estimated SEK 3.55 and SEK 50. The mechanical alternatives can be used on repeated occasions and our assessment is that the cost per use is approximately equivalent between the corrosive blocked pipe dissolvents and the mechanical alternatives. The costs to consumers resulting from the draft amendments can therefore be assumed to be small and consumers’ price sensitivity is not a factor to take into account.

However, it is worth pointing out that those individuals who currently buy and use corrosive blocked pipe dissolvents probably do so because they prefer to use them over the alternatives.[[54]](#footnote-55) In this sense, the draft amendments entail a cost to the consumer since the product that is preferred at the moment becomes less available and a change of behaviour on the part of the consumer is required. For some consumers, it is probably just as easy to use the alternatives available, while for others there is a greater reluctance to use the alternative methods to resolve a blockage. The different choices have different impacts in terms of risks to health and the environment, but in this case the impact on consumer health is the most significant.

Based on our assumption that the draft amendments will cause the use of corrosive blocked pipe dissolvents to largely cease, our assessment is that the poisoning incidents occurring in the baseline scenario will also largely cease in a few years’ time. The socio-economic costs related to poisoning incidents in the baseline scenario are estimated to be SEK 5.3-83.5 million per year (Table 5). Most of these costs are borne by the private individuals who are exposed to the poisoning. We therefore believe that these costs will be avoided as a result of the draft amendments.

Our assumption is that some consumers will have corrosive blocked pipe dissolvents stored at home at the time the rules change and the expected effect will therefore be phased in gradually as the stored dissolvents are used.

#### Impact on the public sector

It is expected that, as a result of the draft amendments, the government’s VAT revenue from the sale of corrosive blocked pipe dissolvents will largely cease. However, this is expected to be offset by the fact that sales of alternatives will increase to approximately the same extent and our assessment is that the net effect on the state’s VAT revenue will be close to zero.

Assuming that the change in the rules will lead to sales of near zero in the future, government revenue from the chemical charge may decrease by approximately SEK 16 200 per year.[[55]](#footnote-56)

The change in the rules means that private individuals who want to use blocked pipe dissolvents must apply to the county administrative boards for authorisation. The application fee is SEK 870. The county administrative boards[[56]](#footnote-57) state that they receive as little as one authorisation application every other year and at most a couple per year for the private handling of products classified as Skin Corrosive in hazard category 1A for private use. They estimate that the processing time, depending on their workload at the time of the application, varies from a couple of hours to a couple of months. They do not believe that they achieve full cost recovery for the processing of applications. Depending on the number of authorisation applications received by the county administrative boards as a consequence of the change in the rules, the county administrative boards’ costs may increase and thus have a negative impact on the State budget. Assuming a processing time of 1-2 person days per case, the cost of the processing is approximately SEK 3 000-6 000 per application.[[57]](#footnote-58)

As noted above, the assumption is that, as a result of the draft amendments, poisoning incidents involving the use of corrosive blocked pipe dissolvents will largely cease. The socio-economic costs of these incidents are estimated in the baseline scenario to be SEK 5.3-83.5 million per year (Table 5). A small part of these costs is borne by the public sector in the form of, among other things, healthcare costs.

As a result of the change in the rules, municipalities will have increased supervisory responsibilities. Our assessment is that the change in the rules will have little impact on the municipalities and therefore we have not calculated this in any greater detail.

#### Impact on businesses

##### Impact on businesses supplying corrosive blocked pipe dissolvents

The assumption is that almost all corrosive blocked pipe dissolvents are sold to private individuals, as the use of corrosive blocked pipe dissolvents among professionals in the plumbing industry is said to be marginal (see Annex II). Furthermore, as a result of the draft amendments, the sale of corrosive blocked pipe dissolvents to private individuals will all but cease.

The businesses supplying[[58]](#footnote-59) corrosive blocked pipe dissolvents can thus be expected to have reduced annual turnover amounting to the entire current sales value, which is estimated above to be SEK 17.8 million per year (excluding VAT). This may, to some extent, lead to a reduction in profits for the businesses concerned.

According to information in the Product Register, the largest number of products are imported from another EU country. We therefore assume that the number of jobs will not be affected as a result of the change in the rules, because production does not take place in Sweden. Furthermore, our assessment is that the reduced profits will affect companies based in Sweden only to a limited extent.

The change in the rules affects all companies that currently sell corrosive blocked pipe dissolvents on the market and the companies are all impacted in the same way as a result of the change. The impact on competitive conditions as a result of the change in the rules depends on the size of the company and the range of products and services the companies make available on the market. We have no data at our disposal for analysing the size of the companies concerned or for investigating whether the companies are active in other industries or sell products other than corrosive blocked pipe dissolvents. We cannot therefore assess how competitive conditions between companies will change as a result of the change in the rules.

Companies will not have any increase in administrative costs as a result of the regulation because, inter alia, the labelling will not be affected. Therefore, we have not assessed administrative costs as a result of the change in the rules.

##### Impact on companies supplying alternatives to corrosive blocked pipe dissolvents

Companies supplying alternatives to corrosive blocked pipe dissolvents (e.g. chemical non-corrosive products, plungers or drain snakes) are expected to sell more products and goods as a result of the change in the rules. In the baseline scenario, the cost of the alternatives was found to be approximately equivalent to the cost of corrosive blocked pipe dissolvents. Our assessment is therefore that companies supplying alternatives will be affected positively, approximately to the same extent as companies selling corrosive blocked pipe dissolvents will be affected negatively by the draft amendments.

##### Impact on retail

Our assessment is that, to a large extent, it is the same retailers that sell corrosive blocked pipe dissolvents and the alternatives, both in grocery retail and special purchase retail. Corrosive blocked pipe dissolvents are a special purchase product that accounts for a small proportion of the total goods and products supplied by retail. There may, however, be individual exceptions where shops selling corrosive blocked pipe dissolvents do not sell alternatives. In such cases, these shops will be affected. The reverse case may also exist, and these shops can benefit from the draft amendments. The impact on total sales of these retailers is therefore presumed to be marginal.

The change in the rules means that companies selling corrosive blocked pipe dissolvents to consumers will be obligated to keep records of the sale, known as the recordkeeping obligation. The company must check that the buyer has authorisation and then document the details of the purchase. The information on the purchase must be kept for presentation in the event of an inspection. Our assessment is that the retailers who will continue to supply corrosive blocked pipe dissolvents are, to a large extent, active in special purchase retail and have professional customers and that they already have systems in place for the sale of products subject to authorisation. We therefore assume that the administrative impact from the change in the rules will be small.

##### Impact on the plumbing industry

The use of corrosive blocked pipe dissolvents is said to be rare among professionals in the plumbing industry. The industry does not advocate the use of corrosive blocked pipe dissolvents because of the risk of accidents during use and because they can damage the drain and make the blockage worse. (see Annex II)

However, corrosive blocked pipe dissolvents may be perceived as a work environment problem because customers sometimes forget to tell them that they have used corrosive blocked pipe dissolvents in an attempt to resolve the blockage. In the worst case scenario, the plumber can then open the water trap or pipe and be unaware that corrosive dissolvents are present in the drain. However, accidents affecting plumbing workers caused by the use of corrosive blocked pipe dissolvents by private individuals are rare (see section 3). The draft amendments essentially eliminate the risk of this type of accident. A certain risk of accident may perhaps remain during a transitional period when private individuals still have corrosive blocked pipe dissolvents that they acquired before the draft amendments came into force.

Our assessment is that the draft amendments will not entail any increased need for private individuals to call in a plumber when a drain is blocked. According to several representatives from the plumbing industry, approximately the same proportion of drain blockages can be resolved using the alternatives to corrosive blocked pipe dissolvents that are available.

##### Impact on property owners and property managers

The negative impact on property owners when corrosive blocked pipe dissolvents destroy pipes and/or do not resolve the blockage but instead move it further into the piping system can be expected to be significantly reduced as a result of the draft amendments. The risk of accidents involving work-related injuries from contact with blocked pipe dissolvents during the disassembly of pipes is also expected to decrease over time. In this inquiry, it has not been possible to ascertain the extent of this problem, or the exact costs that are incurred as a result[[59]](#footnote-60).

### Conclusion of the impact assessment

Our assessment is that, as a result of the draft amendments, use by private individuals of corrosive blocked pipe dissolvents will largely cease. For this reason, poisoning incidents caused by the use of corrosive blocked pipe dissolvents will also essentially cease. This means that socio-economic costs of approximately SEK 5.3-83.5 million per year (Table 5) will be avoided.

Our assessment is that the cost per use is approximately equivalent between the corrosive blocked pipe dissolvent and the mechanical alternatives. The costs to consumers resulting from the draft amendments are therefore expected to be small. However, it is worth pointing out that those individuals who currently buy and use corrosive blocked pipe dissolvents probably do so because they prefer to use them over the alternatives. In this sense, the draft amendments entail a cost to the consumer since the product that is preferred at the moment becomes less available.

Furthermore, the draft amendments will result in reduced revenues for companies supplying corrosive blocked pipe dissolvents. The costs to retail, both from reduced revenue and administrative measures, resulting from the draft amendments are considered to be small. The overall impact on business is deemed to be marginal as this loss of revenue is offset by increased revenue for those companies supplying alternatives to corrosive blocked pipe dissolvents.

The overall assessment of the Swedish Chemicals Agency is that the socio-economic benefits resulting from the draft amendments outweigh the costs.

### Implementation, information, and communication initiatives

In our view, the draft amendments contain technical rules that have to be notified under the Order (1994:2029) on technical regulations. Before the amendment is adopted, the draft amendments are being notified to the European Commission and the procedure normally takes about 3 months.

We expect the rule change will take effect 6 months after adoption. Adoption in 2023 is expected.

In our view, it is possible for the proposed amendments to the rules to be implemented at relatively short notice. This is because:

* the retailers who will continue to supply corrosive blocked pipe dissolvents have, to a large extent, professional customers and they already have systems in place for the sale of products subject to authorisation. This means that no new procedures will have to be established. Instead, existing procedures will need to be extended to include corrosive blocked pipe dissolvents.
* retail operators who do not currently sell to professional customers are expected to phase corrosive blocked pipe dissolvents out of their range, as the sale of corrosive blocked pipe dissolvents to private individuals will essentially cease as a result of the changes in the rules.

Once the rules have been adopted, strategic communication is required for the Swedish Chemicals Agency to inform target groups and other stakeholders of the new rules. Information about the rules will be published on the Swedish Chemicals Agency’s website, both in Swedish and English, once the revised Ordinance has been published. Thereafter, press releases, newsletters and media contacts will be implemented.

The Swedish Chemicals Agency sees a need for targeted communication initiatives and will develop a communication plan to reach stakeholders who are affected by the rules soon after they have been adopted.

Our assessment is that targeted communication initiatives should address the following stakeholders:

* industry organisations;
* manufacturers, importers and distributors of corrosive blocked pipe dissolvents;
* companies active in the retail sector that continue to supply corrosive blocked pipe dissolvents for private individuals;
* the county administrative boards; and
* municipalities.

## Annexes

### Annex I – Case narratives

The Swedish Chemicals Agency received case narratives involving alkaline blocked pipe dissolvents from the Poisons Information Centre (GIC). Some of these are outlined below:

\* While briefly unsupervised, a 5-year-old drank from a bottle containing blocked pipe dissolvent (50 % KOH). The child suffered extensive injury to the oral cavity, throat and oesophagus. Six months after the accident, the child had regular oesophageal expansion due to scarring that had caused narrowing.

\* Suicide case where the patient initially received emergency care but later died as a result of their injuries.

\* An adult accidentally ingested blocked pipe dissolvent. The hospital recorded corrosion injuries to the lips and oral cavity, as well as reddening and swelling of the tongue. Gastroscopy showed serious injuries throughout the oesophagus and stomach. A couple of balloon dilatations were carried out. Following the latter, swallowing improved for a couple of days, but then failed again. After a month, the patient was discharged with a feeding tube.

\* A 23-year-old got caustic soda in one eye when cleaning a drain. They were unable to rinse out the eye immediately. The patient arrived at hospital after just over an hour, treatment was started. On two occasions (day 2 and 5), necrotic parts of the conjunctiva were removed. The patient had increased pain. Due to poor epithelialisation of the cornea and increased adherences between the conjunctive membrane and the inside of the eyelids, the patient was referred to another hospital for autotransplantation of the cornea. However, this was never done as the condition improved. There was further improvement the following week. It is not clear whether the patient was an in-patient, but they were discharged after about three weeks with some remaining problems, including mild to moderate mixed infection, a band of connective tissue in the conjunctiva and a very dilated pupil. The patient had a follow-up after a week.

\* A 3-year-old drank blocked pipe dissolvent. The child screamed and said it hurt. The child vomited 3-4 times. The hospital noted a redness and swelling of the tongue as well as corrosion injuries to the cheeks and in the palate. The larynx did not appear to be irritated. The lining of the oesophagus was reddened and swollen. The depth of the damage was difficult to assess. The next day, a feeding tube and a silicone stent (self-expanding silicone mesh) was inserted into the oesophagus while the child was under anaesthetic. The intention was for the stent to be in place for four weeks. After a week, the child was moved from the ear, nose and throat department to paediatrics. The procedure went relatively well, the child vomited a couple of times probably due to too much food in the feeding tube. Was able to swallow alongside the feeding tube. Sometimes had pain at night, for which the child was given ibuprofen and paracetamol to good effect. After another 4 days in paediatrics, the child was allowed to go home as an out-patient but they returned on a couple of occasions because of blockages in the feeding tube. Just over three weeks after the ingestion, the child was brought in again for replacement of the feeding tube and removal of the stent. The scope showed no signs of strictures or irritation of the mucous membrane anywhere. During their medical care, the child was treated with antibiotics, betamethsone and omeprazole. The feeding tube was removed and the child discharged in good condition four weeks after the accident.

\* A 49-year-old with asthma was clearing drains at home using blocked pipe dissolvent on and off for two days. They started coughing, had difficulty breathing and experienced pain in the lungs. Asthma medication did not help and they described the symptoms as being unlike asthma symptoms. The hospital recorded impaired lung function, PEF8 as low as 380. The patient was given corticosteroids and symptomatic treatment. After four days, the patient was discharged with clearly improved lung function.

\* A person got sodium hydroxide solution on their hands and arms while cleaning drains. They rinsed with water for a long time and visited the hospital the next day. They had corrosion ulcers that healed after a couple of weeks.

\* A 13-year-old tried to make a homemade bomb containing caustic soda, aluminium pellets and water. The child shook this in a soda bottle and got everything in their face. The child came in by ambulance after referral from the GP. During the journey, the child’s eyes and face were rinsed with saline. At hospital, the rinsing of the eyes and face continued. The eyes were assessed by ophthalmologists and no serious eye damage was found. On the skin, first/second degree burns were recorded on the forehead, around the eyes, both cheeks, around the mouth and on the ear. Swollen lips and irritated red tongue, most swelling in the distal part. The child was discharged after two days and had a follow-up check at the ear, nose and throat clinic after three weeks.

\* A 2-year-old ingested caustic soda at home. The child suffered corrosion injuries in the mouth and on the lips and swelling of the larynx. The child was intubated for examination and to protect the airway. As complications, the child developed pneumonic infiltration and fever the day after arriving at hospital. The child could be extubated without complication after two days on a ventilator. The child was discharged in good general condition after four days of hospitalisation.

### Annex II – Consultation

In the course of the Agency’s work to draw up the draft instrument, other authorities and the industry were consulted. The views expressed during such consultation were taken into account in preparing the draft.

**Consultation meeting with trade associations AISE and KoHF**

We invited trade associations and the Poisons Information Centre to two consultation meetings in 2020. The trade associations represented were the Swedish Cosmetics, Toiletries and Detergents Association (KoHF) and the International Association for Soaps, Detergents and Maintenance Products (AISE). The associations were told that the Agency was investigating the need to introduce instruments to manage the risks of corrosive blocked pipe dissolvents and that some of the instruments we were investigating were restrictions taking into account the EU perspective and information instruments. At the meetings, we asked for:

* information on voluntary measures implemented by the industry;
* data on the industry’s study of accidents based on statistics from the Poisons Information Centres in Sweden, Belgium, Germany, Italy and the Netherlands; and
* the concentration ranges that blocked pipe dissolvents must have in order to be effective.

AISE informed us about the root cause analysis it had carried out and presented its report. According to their analysis, accidents were due to the incorrect handling of blocked pipe dissolvents by consumers and there was therefore a need to educate consumers on the correct use of blocked pipe dissolvents. Their consumer survey found that consumers spend about 20 seconds reading the information on the packaging. AISE explained the voluntary icons that they recommend companies print on their labels. The results of the AISE review of product and packaging sizes/solutions were paused when its root cause analysis showed that packaging was not a contributing factor to injury caused by blocked pipe dissolvents (the industry looked at packaging sturdiness, child-resistant sealing and colour selection). Instead, the industry’s assessment was that a lack of information and additional labelling had more impact. There are no internal AISE discussions on changing packaging solutions/sizes. AISE shared their report but they were not able to share raw data.

AISE and KoHF explained that it was difficult to assess the concentration at which a product becomes effective and what benefit a lower limit value would have on the risk of injury. This is because the effectiveness of a product is a complex issue that depends, among other things, on the other ingredients in the product and the organic material in the drain blockage. The information on concentrations in dissolvents that the trade associations had got from their member companies was therefore indicated as a concentration range instead of a certain percentage.

AISE explained that in English, a distinction can be made between ‘drain cleaners’ and ‘drain openers’, where the former can be used for cleaning purposes to maintain drains and prevent a drain from becoming clogged while the latter are designed to resolve blockages in drains that have become clogged. KoHF explained that in Swedish, the terms *propplösare* (blocked pipe dissolvent) and *avloppsrensningsmedel* (drain cleaner) were used both for cleaning purposes to maintain drains and to resolve blockages. However, *avloppsrensningsmedel* can be considered a somewhat antiquated term according to the industry.

**Consultation with the plumbing industry**

Roughly ten conversations were held with both small and large companies active in the piping and plumbing industry. The conversations revealed that plumbers do not use chemical blocked pipe dissolvents at work; mechanical alternatives were considered to be more efficient and reliable. For preventive purposes, detergent and hot water was recommended. If a blockage occurred, these were usually resolved with drain snakes, plumbing snakes or portable high-pressure flushing unit. If these tools did not resolve the blockage, a flushing truck was recommended with a higher capacity to create pressure. A flushthrough from a flushing truck provided a maintenance result that lasted for more than 5 years. Corrosive blocked pipe dissolvents, e.g. ‘caustic soda’, risked destroying the inner plastic film in the pipes, thereby encouraging rust on cast iron pipes. If pipes were in poor condition, both chemical blocked pipe dissolvents and mechanical alternatives in the form of plumbing snakes or high pressure flushing entailed a risk. Plumbers checked the condition of the pipes before starting work to ensure that pipes were not damaged.

The majority of company representatives said they would not recommend corrosive blocked pipe dissolvents and that these risked exacerbating the blockages if not used properly. Cement-like cakes could form in the drains that are difficult to dislodge.

**Consultation with property associations**

Through Sveriges Allmännytta (Public Housing Sweden), who contacted their network of housing companies, no information was forthcoming on the magnitude of the problem of drain blockages or costs related to tenants’ use of chemical blocked pipe dissolvents. The housing companies said it was common for tenants to report blocked drains and for the companies to then remedy these mechanically. The housing companies had produced DIY videos, showing tenants how they can prevent and remedy blockages, recommending that chemical blocked pipe dissolvents were not to be used and explaining that tenants were obligated to maintain and clear drains of hair and the like for preventive purposes.

**Consultation with the Poisons Information Centre**

The Poisons Information Centre provided statistics on accidents involving blocked pipe dissolvents and other household chemicals. The statistics covered the number of phone calls they received from the general public and the healthcare sector related to incidents involving blocked pipe dissolvents. Enquiries had continued to increase in recent years and the Poisons Information Centre was seeing a continued need to regulate the private use of corrosive blocked pipe dissolvents.

The Poisons Information Centre also contributed to our inquiry by providing case narratives (see Annex I) as well as estimates concerning medical interventions, sick leave and lasting harm associated with various types of poisoning incidents (Annex III).

**Consultation with the National Board of Health and Welfare**

Medical experts at the National Board of Health and Welfare were consulted and provided estimates concerning medical interventions, sick leave and lasting harm associated with various types of poisoning incidents (see Annex III). The National Board of Health and Welfare also provided guidance on estimating costs for medical interventions.

**Consultation with the St. Erik Eye Hospital**

Discussions and correspondence with ophthalmologists revealed the hospital has an estimated 2-5 cases of eye injury each year caused by corrosive blocked pipe dissolvents. The hospital’s main catchment area is the Stockholm and Gotland region. The hospital also takes the most serious cases from the rest of the country where stem cell transplants are required in the treatment process.

Ophthalmologists were consulted and provided estimates concerning medical interventions, sick leave and lasting harm of eye injuries of varying degrees of severity involving corrosive blocked pipe dissolvents (see Annex III).

### Annex III – Data for calculating the socio-economic costs of poisoning incidents of varying degrees of severity

#### Introduction

Estimates of socio-economic costs per case of poisoning involving blocked pipe dissolvents are presented here for each PSS level. The costs set out below are rough estimates made by the Swedish Chemicals Agency. The cost estimates are themselves based on estimates of the care needs, sick leave and lasting symptoms that each degree of severity entails, as reconciled with representatives from the National Board of Health and Welfare, the Poisons Information Centre and the St. Erik Eye Hospital. It is important to note that there is some degree of uncertainty in these estimates.

The socio-economic estimates include three overarching types of costs:

* Direct: mainly the cost of out-patient or in-patient care.
* Indirect: costs for various types of lost production, mainly costs for sick leave, reduced capacity for work or absence as a result of caring for a relative.
* Intangible: costs of reduced quality of life and premature death. Reduced quality of life is quantified in this report in terms of lost quality-adjusted life years (QALYs).

No estimate has been made of how the costs are distributed between different stakeholders involved; in particular, the affected individual (e.g. through medical expenses and reduced income as a result of sick leave), their relatives (for the care of the patient) and society in general (e.g. lost production and tax-financed healthcare).

Unless otherwise specified, the estimates refer to costs at the 2020 price level.

#### Minor symptoms (PSS=1)

In the case of minor symptoms such as irritation of the trachea and coughing, minor corrosion injuries in the oral cavity, throat, oesophagus and stomach, or irritation and redness of the eye, a poisoning incident is assumed to involve one visit to out-patient care and one day’s sick leave for the person affected. For internal corrosion injuries, an endoscopic examination of the upper gastrointestinal tract (gastroscopy) is recommended even if symptoms are minor in order to rule out more severe injury. In cases where children are affected, it is assumed that a relative takes one day of leave to care for the child. Minor symptoms are not expected to lead to any lasting harm or effects on the person’s quality of life.

According to the KPP database, the cost per out-patient visit is SEK 3 715.[[60]](#footnote-61)

According to the KPP database, an endoscopy of the upper gastrointestinal tract (gastroscopy) costs SEK 7 011. [[61]](#footnote-62)

The cost of one day’s sick leave (or for caring for children) is estimated at SEK 2 812. This is based on the average labour cost of one working day which is assumed to reflect the socio-economic cost of one day’s sick leave. According to Statistics Sweden, the average salary per full-time equivalent was SEK 36 100 per month in 2020, which corresponds to SEK 433 200 per year.[[62]](#footnote-63) To this is added the full employer’s contribution of 31 per cent and holiday pay of 12 per cent. The number of working days per year is assumed to be 226.[[63]](#footnote-64)

Overall, this means that the cost per case of minor symptoms is an estimated SEK 7 000-10 000, where the higher level applies to injuries in the oral cavity, throat, oesophagus and stomach.

#### Moderate symptoms (PSS=2)

For moderate symptoms, cost estimates for eye injuries and internal injuries due to ingestion are presented here first. Then, an overall estimate of the cost per case of moderate symptoms is made.

##### Moderate symptoms due to eye injury

This refers to moderate injury to the cornea (punctate or larger superficial epithelial ulcers, which cover less than half the cornea surface and do not affect the transparency of the cornea or cause adjacent ischemic abrasion or spot damage) in one eye and intense irritation. Moderate injuries are transient but cause some discomfort. The eye can continue to become dry so one may need to lubricate the eye and correct any vision defects or fatigue in the eye with glasses. Injuries return to fairly normal condition within about a year.

For eye injury as a result of exposure to corrosive blocked pipe dissolvents, only one eye is usually injured as the affected person is normally able to prevent further exposure slightly. If both eyes are exposed, one eye is usually affected to a greater degree as the patient is able to prevent further exposure slightly.

The need for care for this type of injury usually consists of an emergency visit followed by about two visits to the ophthalmologist. The need for surgery may arise but is less likely. Here, the emergency visit can lead to in-patient care, but not always, and the follow-up takes place on an out-patient basis. According to the KPP database, the average cost of in-patient care for ‘Injury around the eye’ is SEK 33 279, while a visit to the doctor for out-patient care for the same type of injury costs SEK 3 229.[[64]](#footnote-65) The total cost of care, consisting of one visit to in-patient care and two visits to out-patient care, is estimated to be around SEK 40 000.[[65]](#footnote-66)

The socio-economic cost of sick leave was estimated above at SEK 2 522 per day. A moderate eye injury leads to a need for sick leave for an estimated 1-2 weeks, resulting in a cost of around SEK 20 000.

To quantify reduced quality of life in terms of quality-adjusted life year losses (QALYs), this report uses disability weights (DW) that have been estimated in the Global Burden of Disease (GBD)[[66]](#footnote-67). DW equal to 0 means no reduction in quality of life, while DW=1 means death. In calculating QALYs, account is taken of both the degree of reduction in the quality of life and the persistence of the reduction. In simple terms, QALY losses are calculated as the DW of the reduction multiplied by the duration of the reduction in number of years.[[67]](#footnote-68) In the case of long-term reductions, a discount rate may also be applied, but this is not relevant for the transient symptoms of moderate injuries (it is, however, relevant for lasting harm that severe symptoms entail). A moderate visual impairment, according to GBD, has a DW of 0.03.[[68]](#footnote-69) For moderate eye injuries, the impairment is transient and the injured eye returns to normal function within about a year. For the purposes of this report, the assumption is that the reduction in quality of life due to a moderate eye injury is 0.01 QALYs. The socio-economic value of one QALY is about SEK 3 million.[[69]](#footnote-70) The cost of reduced quality of life as a result of a moderate eye injury is therefore approximately SEK 30 000.

Overall, the total cost of a moderate eye injury is estimated to be SEK 90 000.

##### Moderate internal symptoms due to ingestion of corrosive blocked pipe dissolvent

The types of symptoms referred to here are moderate injury of the mouth, throat, oesophagus and stomach, as well as moderate dysphagia (difficulty swallowing).

It is estimated that the need for care (and its accompanying costs) consists of:

* approximately one day of in-patient care (SEK 9 558[[70]](#footnote-71));
* an endoscopy of the upper gastrointestinal tract (gastroscopy) in order to rule out severe injuries (SEK 7 011[[71]](#footnote-72)); and
* one follow-up examination of dysphagia in out-patient care (SEK 2 988[[72]](#footnote-73)).

The need for surgery in these cases is less likely. Overall, this indicates that medical interventions due to moderate internal injuries cost around SEK 20 000.

When it comes to the need for sick leave (or care for children), the same assumption as for moderate eye injuries above is made i.e. 1-2 weeks’ absence at a cost of about SEK 20 000.

The impact on the quality of life of moderate symptoms in the mouth and throat, including dysphagia, is assumed to be approximately the same as the impact for moderate eye injuries. In other words, a relatively low DW for a limited period of time. For example, under the GBD, a DW for minor forms of dysphagia has been estimated as 0.01. Here, as for eye injuries, the assumption is a total QALY loss of 0.01, with a value of about SEK 30 000.

Overall, the costs per case of moderate internal symptoms due to ingestion of corrosive blocked pipe dissolvent are estimated to be around SEK 70 000.

##### Summary of costs for cases of moderate symptoms

Cases with moderate symptoms due to eye injury are estimated to result in socio-economic costs of SEK 90 000 per case, while moderate symptoms due to ingestion are estimated to cost slightly less at SEK 70 000 per case. The overall assessment is that the cost of cases with moderate symptoms is SEK 70 000-90 000 per case.

#### Severe symptoms (PSS=3)

As for moderate symptoms, cost estimates for eye injuries and internal injuries due to ingestion are presented here first. Then, an overall estimate of the cost per case of severe symptoms is made.

##### Severe symptoms due to eye injury

The symptoms referred to here are serious corneal damage (superficial epithelial ulcers covering the entire cornea surface often affecting cornea transparency and ischemia in adjacent tissue (limbus/conjunctiva), or melting of the cornea or sclera (in the extreme case perforation) in one eye and a permanent visual impairment. In these cases, the stem cells of the cornea and often also the glands of the conjunctiva are damaged, resulting in a dry eye with corneal fibrosis. Changing the cornea alone does not help restore vision in these cases. Instead, prior stem cell transplantation from the healthy eye is usually required (assuming the other eye was not affected), sometimes combined with an oral mucosa transplant (replaces the damaged conjunctiva). The initial healing process lasts for several months, in some cases up to a year. Usually there is also damage to the skin next to the eye. This injury is treated in parallel with the eye damage, not least to recreate a functioning local environment for a functioning eye. The damage that has occurred to the stem cells is permanent and causes lifelong visual impairment. As it is usually only one eye that is damaged, the other eye (if it is healthy) can compensate and mitigate the overall visual impairment. However, it takes at least six months for the brain to adapt to full vision with only one working eye (e.g. depth perception and judging distances).

The need for care is estimated to be 2-5 surgeries of the cornea initially, sometimes with skin transplantation and ongoing follow-up visits to ophthalmologists for several years afterwards. According to the KPP database, the cost of a cornea transplant (B06) is SEK 27 201 per care contact. According to KPP, the cost of skin transplantation in out-patient care (J04) is SEK 16 581. Follow-up visits to the doctor in out-patient care are assumed to cost SEK 3 229 per contact. The total cost of care services is estimated at around SEK 150 000 per case, which corresponds to four corneal interventions including stem cell, corneal and sometimes oral mucosa transplants and about ten follow-up visits. Less often, a skin transplant is needed.

The need for sick leave is usually equivalent to a couple of months full-time. Even then, the ability to work may be reduced (due to discomfort, sensitivity to light, headache, fatigue, etc.) up to six months after the poisoning incident. For professions that require good vision, e.g. professional drivers, the period of sick leave may be even longer. There may be a need to change profession. Here it is assumed that the sum of sick leave and reduced working capacity amounts to 60 working days per case. The socio-economic cost of sick leave was estimated above at SEK 2 522 per day. The cost of lost production due to sick leave and reduced working capacity is therefore estimated at SEK 150 000 per case of serious eye injury.

In these cases, the visual impairment of the damaged eye can usually be described as severe according to the definition[[73]](#footnote-74) used in GBD. If the second eye is healthy, then the total visual impairment (after the first adjustment period of about six months to one year) can be defined as moderate[[74]](#footnote-75). Under GBD, DW for moderate visual impairment is 0.03 while severe visual impairment results in a DW of 0.18.[[75]](#footnote-76)

The overall impairment to the quality of life per case of severe eye injury is estimated at 0.9 QALYs. The calculation is based on the following assumptions:

* In the first six months after the incident, DW=0.18. QALY losses during this six-month period are assumed to be 0.09 (0.18\*0.5).
* The incident is assumed to occur approximately in the middle of the person’s life and the victim is then assumed to live for 40 years with moderate visual impairment where DW=0.03.
* Future QALY losses are discounted by 2 per cent per year.[[76]](#footnote-77)
* Based on the above conditions, the present value of QALY losses over the 40 years of moderate visual impairment is 0.82.

Society’s willingness to pay per QALY is assumed to be around SEK 3 million[[77]](#footnote-78), and the socio-economic value of the decline in quality of life resulting from a serious eye injury is thus an estimated SEK 2.7 million.

The total socio-economic cost is the sum of direct care costs (150 000), the indirect costs in terms of production loss (150 000) and the intangible costs in terms of reduced quality of life (2.7 million), and amounts to an estimated SEK 3 million per case of severe eye damage.

##### Severe internal symptoms due to ingestion of corrosive blocked pipe dissolvent

The symptoms referred to here are severe injury of the mouth, throat, oesophagus and stomach, including severe dysphagia (difficulty swallowing).

According to case studies from the GIC (see Annex 1 for some examples), this type of case involves in-patient care for several days, in some cases up to one month. During in-patient care and also thereafter, recurrent treatment (dilatations, fitting of stent) takes place under general anaesthesia. According to a price list for the Southern healthcare region, in-patient care in the ear, nose and throat department costs SEK 9 558 per day.[[78]](#footnote-79) No specific cost data for dilatations of the oesophagus have been identified, but according to the KPP database, ‘Operations on the stomach, oesophagus and duodenum’ in out-patient care cost an average of SEK 16 724.[[79]](#footnote-80) Overall, the cost of care is estimated to be between SEK 100 000 and 500 000, depending on the length of hospitalisation and the number of recurrent dilatations and possible other treatments.

As for severe eye injuries, it is assumed that the sum of sick leave and reduced working capacity amounts to 60 working days and the cost of production loss is estimated at SEK 150 000 per case of severe internal injuries.

Quality of life is affected by difficulty swallowing and eating, as well as ulcers and scarring in the mouth, throat and further down. There is a risk that the damage will be permanent. Under GBD, DW for severe dysphagia is approximately 0.1 (up to 0.14), while DW for minor dysphagia is estimated at 0.01. The extent of QALY loss depends on whether the symptoms can be defined as minor or moderate dysphagia and the extent to which they persist. In the work on this report, we have not identified the extent to which persistent symptoms occur and, if so, with what severity. A rough assumption is that each case of severe internal symptoms resulting from ingestion of corrosive blocked pipe dissolvent leads to quality of life reductions equivalent to 0.1-0.5 QALYs, at a socio-economic cost of SEK 0.3-1.5 million (current value). The lower part of the range corresponds to 1 year of severe dysphagia or 10 years of minor dysphagia, while the upper part of the range corresponds to e.g. 2 years of severe dysphagia and 40 years of minor dysphagia.[[80]](#footnote-81)

The overall picture is that the socio-economic cost per case of severe internal symptoms resulting from ingestion of corrosive blocked pipe dissolvent is very unclear, but a rough estimate is a cost of around SEK 0.5-2 million.

##### Summary of costs for cases of severe symptoms

Cases with severe symptoms due to eye injury are estimated to result in socio-economic costs of around SEK 3 million per case, while severe symptoms due to ingestion are estimated to cost slightly less at SEK 0.5-2 million per case. The overall assessment is that the cost of cases with severe symptoms is SEK 0.5-3 million per case.

#### Fatalities (PSS=4)

In the most recent available version of ASEK[[81]](#footnote-82), the risk valuation for deaths is SEK 44 million in monetary terms (2017). In 2020 monetary terms, this corresponds to SEK 46 million.[[82]](#footnote-83)

1. Cases where the GIC recommends medical care or where the patient is already in hospital. Medical care is recommended in the vast majority of cases where accidents involve children and in case of eye exposure. [↑](#footnote-ref-2)
2. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. [↑](#footnote-ref-3)
3. The proposed restriction measures analysed by the Swedish Chemicals Agency were: (a) Ban on sodium hydroxide and potassium hydroxide in blocked pipe dissolvents sold to consumers; (b) Ban on all substances classified as ‘Corrosive 1A’ (including acids) in blocked pipe dissolvents sold to consumers; c) Requirements for packaging (size, shape, etc.) for blocked pipe dissolvents sold to consumers; (d) Measures at the sales outlet e.g. sales over the counter, locked cabinets, etc. for blocked pipe dissolvents sold to consumers. [↑](#footnote-ref-4)
4. https://www.fhi.no/nyheter/2013/flere-uhell-med-etsendeavlopsapnere/ (visited 09/02/2022) [↑](#footnote-ref-5)
5. Swedish Chemicals Agency – Report 6/17: Handlingsplan för en giftfri vardag 2015–2017 slutredovisning (Action plan for a toxic-free everyday environment 2015-2017 final report); Report 4/20: Vägen mot en giftfri vardag (Towards a toxic-free everyday environment) [↑](#footnote-ref-6)
6. The Poisons Standard. [↑](#footnote-ref-7)
7. The Control of Poisons and Explosives Precursors Regulations 2015. [↑](#footnote-ref-8)
8. Poisons (Sodium Hydroxide) Regulations 1962. [↑](#footnote-ref-9)
9. Personal correspondence, Swedish Cosmetics, Toiletries and Detergents Association (KoHF), e-mail 12/10/2017 [↑](#footnote-ref-10)
10. In the plumbing industry. [↑](#footnote-ref-11)
11. Unless otherwise stated, all the information in this section comes from the records kept by the Poisons Information Centre (GIC) of calls received on poisoning incidents. [↑](#footnote-ref-12)
12. Other causes of poisoning incidents recorded by the GIC are ‘Unintentional mis-measuring/mix-up’, ‘Intentional overdose’, ‘Self-destructive action’ or ‘Misuse’. [↑](#footnote-ref-13)
13. Conversations with plumbing companies indicate that blocked pipe dissolvents are perceived as a work environment problem, even if few plumbing companies or plumbers themselves actually use chemical dissolvents. Customers sometimes forget to tell the plumber that they have used a dissolvent in an attempt to solve the problem. In the worst case scenario, the plumber can then open the water trap or pipe and be unaware that corrosive dissolvents are present in the drain. Even in cases where the plumber has asked if dissolvents were used, there is a risk of exposure despite protective equipment such as glasses and gloves. See also Annex II. [↑](#footnote-ref-14)
14. The Work Environment Authority’s register of occupational injuries contains only two accidents linked to consumer use of drain cleaning products during the period 2016-2019 (Work Environment Authority, e-mail 08/07/2020). [↑](#footnote-ref-15)
15. Poisons Information Centre, e-mail, 05/10/2020 [↑](#footnote-ref-16)
16. Note that the numbers shown in Table 1 are not fully comparable to those in Figure 1 above. This is partly because Table 1 is based on the number of enquiries in total while Figure 1 is based on the number of separate cases and the same case may prompt more than one enquiry to the GIC, and partly because the route of exposure was not always recorded. [↑](#footnote-ref-17)
17. Conversation with ophthalmologist at the St. Erik Eye Hospital, 26/05/2021 [↑](#footnote-ref-18)
18. AISE, e-mail, 16/06/2020. [↑](#footnote-ref-19)
19. Conversation with ophthalmologist at the St. Erik Eye Hospital, 26/05/2021 [↑](#footnote-ref-20)
20. For a more comprehensive account of symptoms at the different PSS levels, see <https://www.who.int/ipcs/poisons/pss.pdf>. [↑](#footnote-ref-21)
21. AISE, e-mail, 16/06/2020. [↑](#footnote-ref-22)
22. Clarification of the calculations. PSS=2 is assumed to represent 11 %/(11 %+ 3 %+ 1 %) of all cases where PSS>=2. The percentage of cases where PSS>=2 is assumed to be 5.4 %. So the number of cases where PSS=2 is calculated as 5.4 % \* 11 %/(11 %+ 3 %+ 1 %) = 4.0 %. Corresponding calculations are made for PSS=3 and PSS=4. [↑](#footnote-ref-23)
23. <https://www.aise.eu/documents/document/20191220172459-2019_12_drain_openers_voluntary_safety_advice_final.pdf> (visited 09/02/2022). [↑](#footnote-ref-24)
24. <https://www.cleanright.eu/se/products/1819:drain-cleaners-se.html> (visited 09/02/2022). [↑](#footnote-ref-25)
25. <https://www.kohf.se/nyheter2/2016/12/14/hantera-propplsare-med-frsiktighet> (visited 09/02/2022). [↑](#footnote-ref-26)
26. <https://www.kemi.se/kemikalier-i-vardagen/kemikalier-i-hemmet-och-pa-fritiden/rengoringsmedel#h-Propplosare> , <https://giftinformation.se/temasidor/forgiftningar-barn/kemiska-produkter/varning-for-propplosare/?epslanguage=sv>, [↑](#footnote-ref-27)
27. <https://www.kemi.se/publikationer/broschyrer-och-foldrar/varning-for-fratande-propplosare> [↑](#footnote-ref-28)
28. <https://www.kemi.se/kemikalier-i-vardagen/vara-rad-om-kemikalier/lyssna-pa-var-podcast-kemikaliepodden> [↑](#footnote-ref-29)
29. <http://www.hannashus.se/> [↑](#footnote-ref-30)
30. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. [↑](#footnote-ref-31)
31. Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. [↑](#footnote-ref-32)
32. Judgment of the Court of Justice of 7 March 2013, Lapin, C-358/11, EU:C:2013:142. [↑](#footnote-ref-33)
33. See also EFTA Court judgment in Case E-9/16, EFTA Surveillance Authority v Kingdom of Norway. [↑](#footnote-ref-34)
34. See, for example, judgment of the Court of Justice of 17 December 1981, Frans-Nederlandse Maatschappij, C-272/80, EU:C:1981:312 and judgment of the Court of Justice of 7 November 1989, Nijman, C-125/88,EU:C:1989:401. [↑](#footnote-ref-35)
35. See, for example, judgment of the Court of Justice of 4 June 2009, Mickelsson and Roos, C-142/05, EU:C:2009:336. [↑](#footnote-ref-36)
36. Communication from the Commission on the precautionary principle, COM(2000) 1 final [↑](#footnote-ref-37)
37. See, for example, judgment of the Court of Justice of 24 November 1993, Keck and Mithouard,C-267/91, EU:C:1993:905; judgment of the Court of Justice of 29 June 1995, Commission v Greece, C-391/92, EU:C:1995:199. [↑](#footnote-ref-38)
38. See, for example, judgment of the Court of Justice of 10 February 2009, Commission v Italy, C-110/05, EU:C:2009:66. [↑](#footnote-ref-39)
39. Regulatory Management Option Analysis [↑](#footnote-ref-40)
40. The proposed restriction measures analysed by the Swedish Chemicals Agency were: (a) Ban on sodium hydroxide and potassium hydroxide in blocked pipe dissolvents sold to consumers; (b) Ban on all substances classified as ‘Corrosive 1A’ (including acids) in blocked pipe dissolvents sold to consumers; c) Requirements for packaging (size, shape, etc.) for blocked pipe dissolvents sold to consumers; (d) Measures at the sales outlet e.g. sales over the counter, locked cabinets, etc. for blocked pipe dissolvents sold to consumers. [↑](#footnote-ref-41)
41. The person who buys the product is not necessarily the person who then uses it and therefore the transfer of information cannot be ensured. Accidents also occur in connection with storage in the home environment; see section 3. [↑](#footnote-ref-42)
42. (See, for example, judgment of the Court of Justice of 11 July 2000, Toolex Alpha, EU C-473/98, EU:C:2000:379). [↑](#footnote-ref-43)
43. Categorisation based on PSS (Poisoning Severity Score) is a standardised scale for grading the severity of poisoning incidents. The scale has four levels: minor, moderate, severe and fatal (<https://www.who.int/ipcs/poisons/pss.pdf>). Examples of symptom types related to corrosive blocked pipe dissolvents at the respective PSS level can be found in Tabell 2. [↑](#footnote-ref-44)
44. Fewer tonnes are indicated in the trend description because that figure shows only the volume of products recorded in the drain cleaner category for the years 2004 to 2015 and 2019. When reviewing different categories in the 2019 product register, we found that blocked pipe dissolvents were also recorded under the detergents category. To obtain a comparable trend over time, the product volume in the drain cleaner category is shown, even though we know that the combined volume of blocked pipe dissolvents amounted to 350 tonnes in 2019. [↑](#footnote-ref-45)
45. The product names of the products in the detergent category indicate that they are blocked pipe dissolvents registered in the wrong category. There are no other products for dissolving pipe blockages registered in other categories. The volumes above represent the total amount of registered blocked pipe dissolvent. [↑](#footnote-ref-46)
46. According to several representatives from the plumbing industry, blocked drains can be resolved using the mechanical methods available, both with a higher degree of effectiveness and lower risk compared to corrosive blocked pipe dissolvents. See Annex II. [↑](#footnote-ref-47)
47. Price data is taken from business websites (2020) and prices per product vary between places of purchase. The prices for the mechanical methods listed here are an average of the various prices found during searches. [↑](#footnote-ref-48)
48. As reported by the company Röret that places the product on the market. [↑](#footnote-ref-49)
49. As reported by the company Röret that places the product on the market. [↑](#footnote-ref-50)
50. E.g. Brf Vändkretsen, HSB Brf Fågelsången, Brf Thunbergia, Brf Gångaren 1, Brf Loket 1, HSB Brf Furan, Brf Saima, Brf Kanten, Brf Buketten, BRF Troed, Brf Obelisken 3, Brf Hästhoven, Brf Kallsjön. [↑](#footnote-ref-51)
51. Vi i Villa, JM, HSB, Svenska Bostäder, etc. [↑](#footnote-ref-52)
52. Personal correspondence, EFS AB, 11/10/2017. [↑](#footnote-ref-53)
53. The only specific cost estimate that emerged from the work on this inquiry was from one housing association (HSB BRF Flemingsberg), which indicated they had annual costs of approximately SEK 10 000-20 000 for 300 apartments. If this cost is representative of all 2 585 000 apartments in multi-dwelling buildings in Sweden, it means annual costs of approximately SEK 85-171 million. [↑](#footnote-ref-54)
54. It is worth noting that the continuous increase in the number of poisoning incidents, as outlined in section 3, may indicate that some individuals underestimate the risks of using corrosive blocked pipe dissolvents. [↑](#footnote-ref-55)
55. There are about 20 products registered in the Product Register, which are available to consumers. By simply assuming that none of the companies will pay double charges for the products or reach the maximum ceiling, the product charge will amount to SEK 12 000 per year (20 products \* SEK 600 = SEK 12 000). The volume charge is about SEK 4 200 per year (350 tonnes \* SEK 12/tonne = 4 200). [↑](#footnote-ref-56)
56. We received responses from the county administrative boards in Norrbotten, Skåne, Stockholm, Södermanland, Värmland and Västra Götaland. [↑](#footnote-ref-57)
57. Average monthly salary for ‘Other administrators’ (SSYK 3359) in the State sector was approximately SEK 32 400 in 2020 (SCB, Average monthly salary and salary dispersion in the State sector by occupation (SSYK 2012) and gender, 2014-2020), which corresponds to SEK 388 800/year. To this is added the full employer’s contribution of 31 per cent, holiday pay of 12 per cent, and model overhead costs of 25 per cent in accordance with the Swedish Agency for Economic and Regional Growth’s recommendations for calculating administrative costs in the private sector (Swedish Agency for Economic and Regional Growth, Economic effects of new rules, Info 0696). The number of working days per year is assumed to be 226. The cost per person day is then calculated as 388 800 \* 1.31 \* 1.12 \* 1.25 / 226 = SEK 3 155. [↑](#footnote-ref-58)
58. This refers to companies that manufacture, import or distribute the product. The impact on businesses selling the product to final users is described in section 6.2.3.3. [↑](#footnote-ref-59)
59. For an indication of the costs, see section 6.1.3 footnote 48. [↑](#footnote-ref-60)
60. Cost per patient (KPP database), Swedish Association of Local Authorities and Regions. [↑](#footnote-ref-61)
61. Cost per patient (KPP database), Swedish Association of Local Authorities and Regions. DRG code F72O. ‘Endoscopy of the upper gastrointestinal tract, out-patient care’. [↑](#footnote-ref-62)
62. SCB. Average monthly salary by sector 1992-2020. [↑](#footnote-ref-63)
63. 433 200 \* 1.31 \* 1.12 / 226 = 2 812. [↑](#footnote-ref-64)
64. Cost per patient (KPP database), Swedish Association of Local Authorities and Regions. The care measures needed in these cases are assumed to fall under DRG codes B30O and B30N, ‘Injury around the eye’. [↑](#footnote-ref-65)
65. 33 279 + 2 \* 3 229 = 39 737. [↑](#footnote-ref-66)
66. <https://www.thelancet.com/gbd/about> [↑](#footnote-ref-67)
67. In reality, however, it is common for the reduction not to be constant, but to decease over time. [↑](#footnote-ref-68)
68. Disability weights, GBD 2019, Appendix I, Table S13, <https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30925-9/fulltext#supplementaryMaterial> [↑](#footnote-ref-69)
69. Olofsson, S. et al, 2019, <https://link.springer.com/article/10.1007/s10198-019-01077-8> [↑](#footnote-ref-70)
70. According to Regionala priser och ersättningar för Södra sjukvårdsregionen 2020 (Regional prices and compensatory payments for the Southern healthcare region 2020), Southern Regional Healthcare Committee, 2019. [↑](#footnote-ref-71)
71. Cost per patient (KPP database), Swedish Association of Local Authorities and Regions. DRG code F72O. ‘Endoscopy of the upper gastrointestinal tract, out-patient care’. [↑](#footnote-ref-72)
72. Cost per patient (KPP database), Swedish Association of Local Authorities and Regions. DRG code C77O. ‘Examination of dysphagia and non-linguistic oral motor skills, visit’. [↑](#footnote-ref-73)
73. Severe vision impairment: has severe vision loss, which causes difficulty in daily activities, some emotional impact (or example worry), and some difficulty going outside the home without assistance. [↑](#footnote-ref-74)
74. Moderate vision impairment: has vision problems that make it difficult to recognize faces or objects across a room. [↑](#footnote-ref-75)
75. Disability weights, GBD 2019, Appendix I, Table S13, <https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30925-9/fulltext#supplementaryMaterial> [↑](#footnote-ref-76)
76. Assumption is based on ASEK 7.0. ASEK recommends 3.5 % as the real interest rate and 1.5 % as increased willingness to pay, which gives a net of 2 %. This could be an overestimation. According to ASEK, the pure time preference rate is 0.5 %. At a lower discount rate, the present value of future QALY losses will be higher. [↑](#footnote-ref-77)
77. Olofsson, S. et al, 2019, <https://link.springer.com/article/10.1007/s10198-019-01077-8> [↑](#footnote-ref-78)
78. Regionala priser och ersättningar för Södra sjukvårdsregionen 2020, Södra Regionvårdsnämnden, 2019. (Regional prices and compensation for the Southern healthcare region, Southern Healthcare Committee) [↑](#footnote-ref-79)
79. Cost per patient (KPP database), Swedish Association of Local Authorities and Regions. DRG code F13. [↑](#footnote-ref-80)
80. Future QALY losses have been discounted by 2 per cent per year. [↑](#footnote-ref-81)
81. ASEK is the Swedish Transport Administration’s ‘Analysis methods and socio-economic costing values for the Transport Sector’. The latest version is ASEK 7.0: <https://www.trafikverket.se/for-dig-i-branschen/Planera-och-utreda/Planerings--och-analysmetoder/Samhallsekonomisk-analys-och-trafikanalys/gallande-forutsattningar-och-indata/>. [↑](#footnote-ref-82)
82. According to Statistics Sweden, the Consumer Price Index (CPI) rose by 4.3 per cent from 2017 to 2020. SCB, Consumer Price Index (1980=100), established figures, <https://www.scb.se/hitta-statistik/statistik-efter-amne/priser-och-konsumtion/konsumentprisindex/konsumentprisindex-kpi/pong/tabell-och-diagram/konsumentprisindex-kpi/kpi-faststallda-tal-1980100/> [↑](#footnote-ref-83)