

# Swedish Poisons Information Centre Annual Report 2021



**Giftinformationscentralen**  
SWEDISH POISONS INFORMATION CENTRE

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## 1. Summary

- During 2021 the telephone service answered 96 568 telephone calls, a slight increase of 0.2% on 2020.
- The number of calls from the general public decreased slightly, whereas those from the healthcare system continued to increase during 2021 (+8% compared to 2020). This is part of a long-term trend which has resulted in a markedly higher share of inquiries from the healthcare professionals (38% of all calls to the centre) compared to ten years ago (26%). These inquiries are generally more complex than those from the general public. In almost 8 000 calls, consultation with a senior consultant (a physician specialised in intensive care and toxicology) was required.
- During the year, a large and worrying increase of inquiries concerning self-destructive poisonings in female adolescents was noteworthy. This was especially pronounced among younger girls (10 - 14 years) where the 1 438 inquiries amounted to a 62% increase compared to 2020. There was no increase among boys.
- Paracetamol (acetaminophen) is still by far the most common drug responsible for poisonings. The number of inquiries regarding intentional overdoses with paracetamol continued to increase in 2021. However, the rise in inquiries from hospitals about intentional paracetamol overdoses this year (+8%) could entirely be attributed to the adolescent group (10 - 19 years).
- During 2021, the Swedish Poisons Information Centre published 3 scientific articles and 4 abstracts.
- The Poisons Centre has provided about 50 seminars and lectures in 2021 for Swedish or international audiences.
- Similar to 2020, the pattern of inquiries about poisonings was largely unchanged by the COVID-19 pandemic. However, the operation of the Poisons Centre was greatly affected during most of the year. A large part of the work was carried out remotely in compliance with recommendations from the Public Health Agency of Sweden.

## 2. The Swedish Poisons Information Centre

The Swedish Poisons Information Centre is a national service tasked with providing information, including guidelines and advice on treatment and general care, to patients with acute intoxications. Counselling is mainly via our telephone service, which provides triage/case management to the national healthcare system and the general population, around the clock, every day of the year.

The Swedish Poisons Information Centre has been in practice since 1960, making it one of the oldest Poisons Information Centres in Europe. Our mission is to provide advice to the general population and healthcare providers, thereby reducing unnecessary consumption of healthcare resources in cases of benign exposure, while mitigating the harms of toxic exposure.

To be able to provide sound and up-to-date advice in a timely fashion, the Centre has developed a unique database with more than 8 000 treatment documents based on toxicological and medical reports from the published medical literature and from experience gathered through local poison centre data. The documents are evaluated by senior physicians and pharmacists at the Poison Centre prior to publication and are continuously revised and updated. Monitoring of new drugs is considered particularly important in this process, and by developing our own in-house database, we can provide information tailored to the national toxicological panorama and the healthcare system.

In accordance with EU Regulation 1272/2008 (CLP), the Poisons Centre is formally appointed as the body responsible for receiving information about the chemical composition of products classified as hazardous based on their health or physical effects. These are used to develop preventive and therapeutic measures, especially in emergencies.

Other assignments on a national basis include training of hospital staff and physicians (e.g., via an annual five-day course in acute poisoning), and contributing to the medical literature through national and international publications of peer-reviewed articles and textbook chapters. Moreover, updated clinical advice in toxicology is provided via the Poison Centre webpage for healthcare professionals, in parallel with general advice concerning poisons and poisonings on the webpage for the general public.

The Swedish Poisons Information Centre is a unit within the Swedish Medical Products Agency, a governmental body under the Ministry of Health and Social Affairs. It is financed by appropriations. Approximately 40 people work at the centre, the majority being pharmacists and physicians specialised in anaesthesia, intensive care and toxicology.

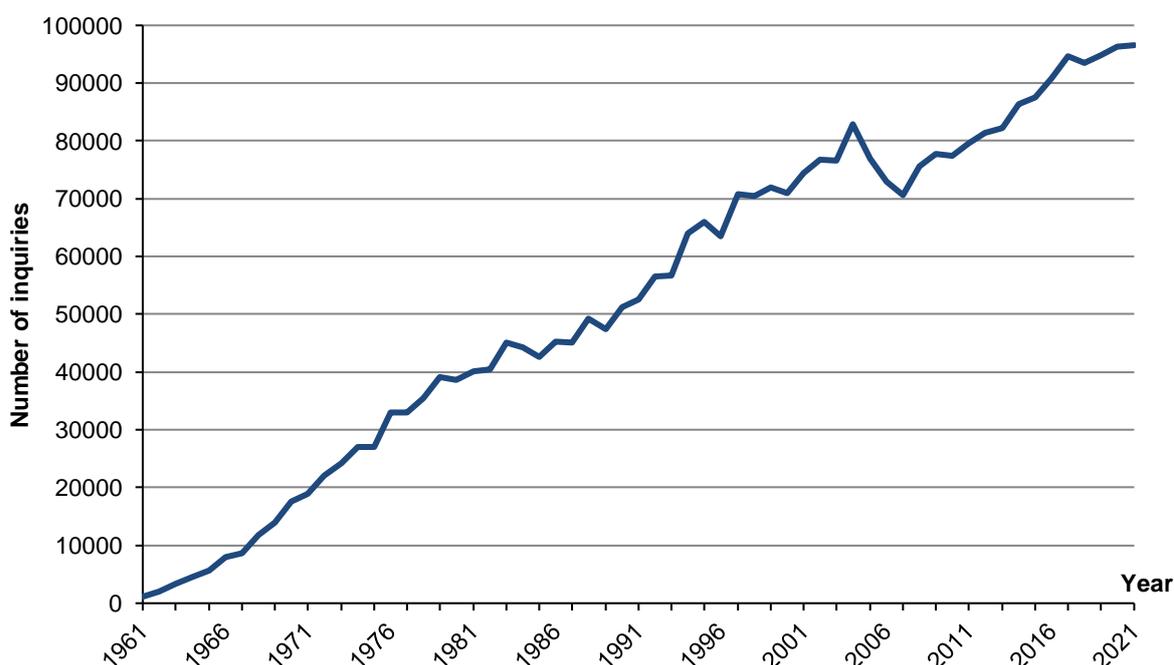
### 3. Telephone Service

The main responsibility of the Swedish Poisons Information Centre is to provide specialised advice to healthcare professionals and the general public in cases of acute poisoning, including but not limited to pharmaceuticals, chemical products or biological toxins.

The information is provided by telephone 24 hours per day, 365 days per year. The telephone service is connected to the national emergency number 112 and is always manned by pharmacists and one anaesthesiologist on duty call. Healthcare professionals and emergency services have access to prioritized consultation lines.

The trends in annual call numbers between 1961 and 2021 are illustrated in Figure 1.

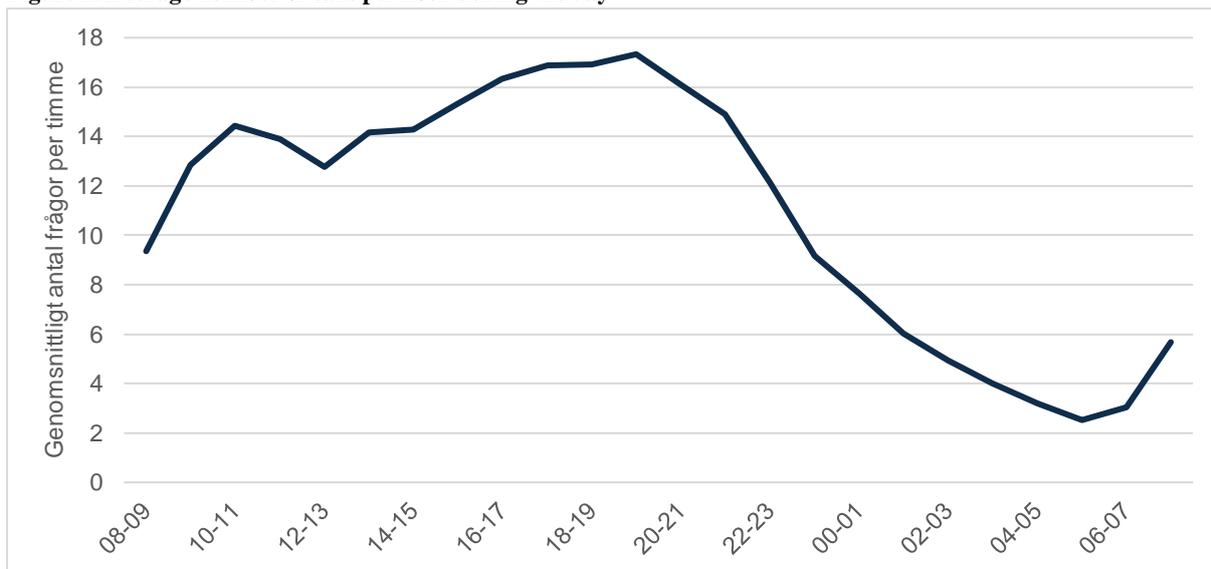
**Figure 1. Number of calls to Swedish Poisons Information Centre 1961–2021**



The total number of calls in 2021 was 96 568. More than a third of the inquiries (34 539) were from the healthcare services. Of these, 72% were from hospitals, 21% from national emergency number operators or paramedics and 7% from primary care providers. The inquiries from hospitals are often medically complex and the Poison Centre’s anaesthesiologists are involved in approximately one quarter of these.

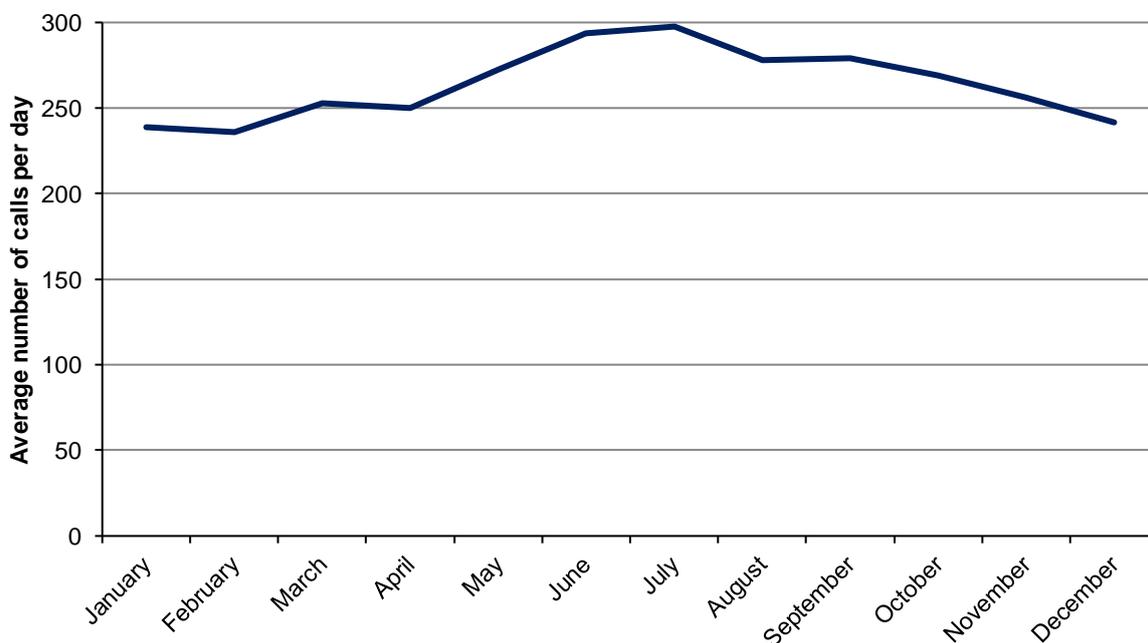
The average number of calls per 24-hour period was 265, with the main peak of incoming calls between 4 and 8 p.m., and a smaller peak around 10 a.m. The 24-hour variation in number of calls is shown in Figure 2.

**Figure 2. Average number of calls per hour during the day**



Generally, the most intense period for the Poisons Centre is summer to early fall, which can be seen in Figure 3. This is the season when both children and adults are exposed to berries, mushrooms, insects and snakes to a higher extent. In July 2021, the average daily number of calls reached a record high of 298. In accordance with the trend of the latest years, there was a high number of inquiries about viper bites in 2021 (837 in total). The number of inquiries about mushrooms was around average (1 423 in total).

**Figure 3. Seasonal variation, average number of calls per day**



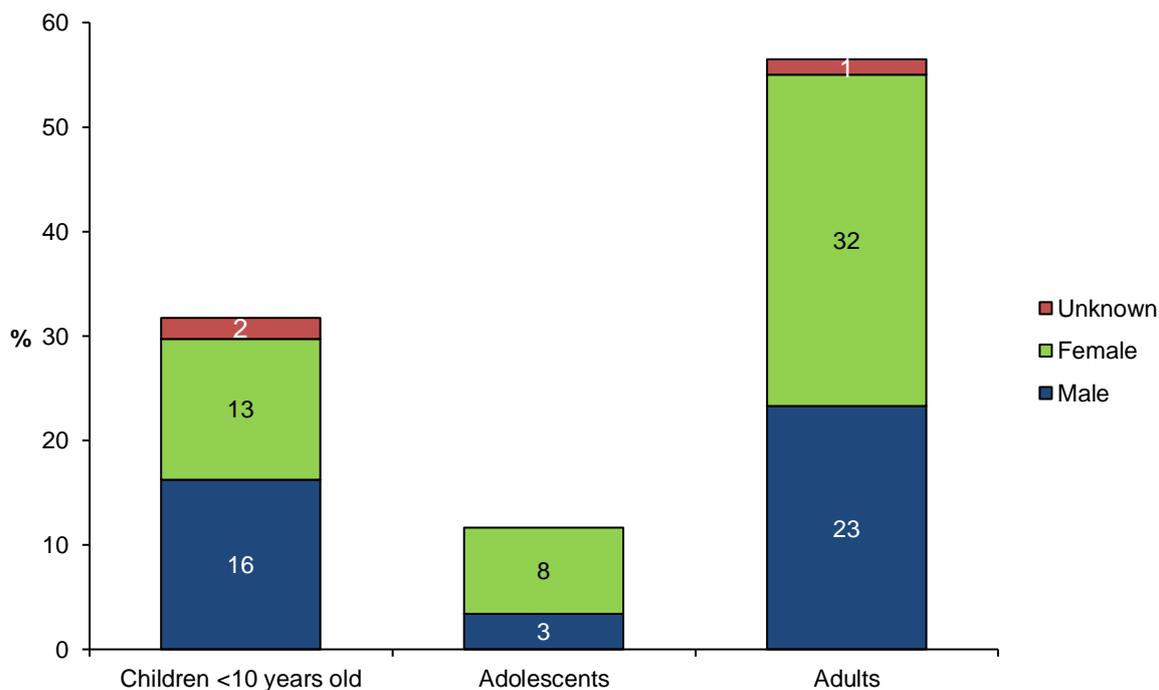
Of the 96 568 calls the Centre received during 2021, 89 425 concerned human poisonings or exposures. The remainder was requests for general information (6 126 calls) or concerned animals (1 017 calls).

### 3.1. Human Poisonings/Exposures

A majority of the 89 425 calls concerning human poisonings/exposures came from the general public (60%), 38% from healthcare professionals and only a few percent from other sources. An increasing proportion of calls from healthcare professionals is part of a long-term trend.

56% of the inquiries concerned adults, 12% adolescents (10–19 years) and 32% children below 10 years. In 2021, there was a notable increase of inquiries about adolescents (+17%) while the other age groups decreased slightly. The distribution is illustrated in Figure 4.

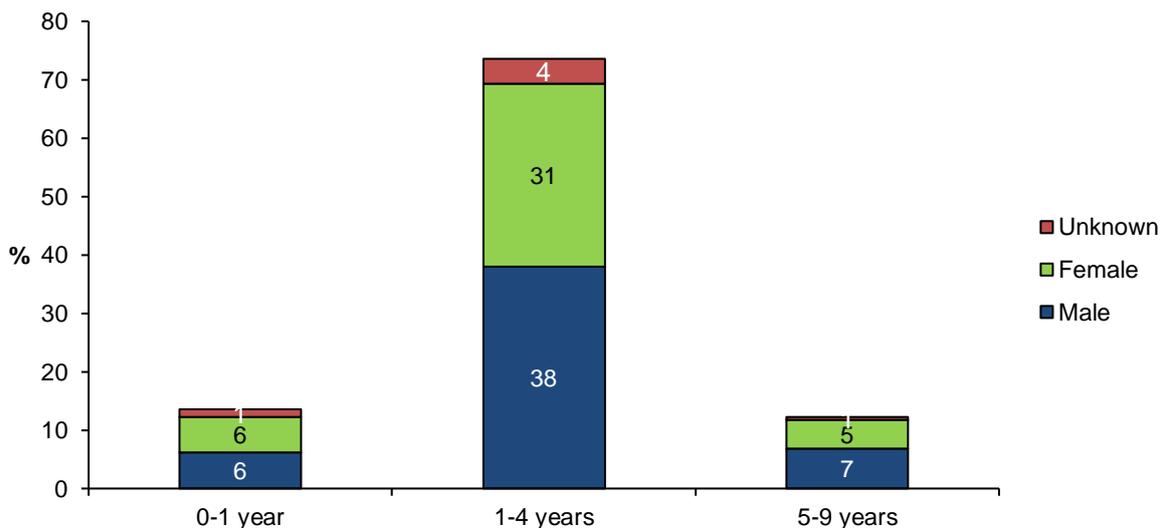
Figure 4. Age and gender (%), inquiries about human poisonings/exposures (n=89 425)



#### 3.1.1. Poisonings/exposures in children <10 years

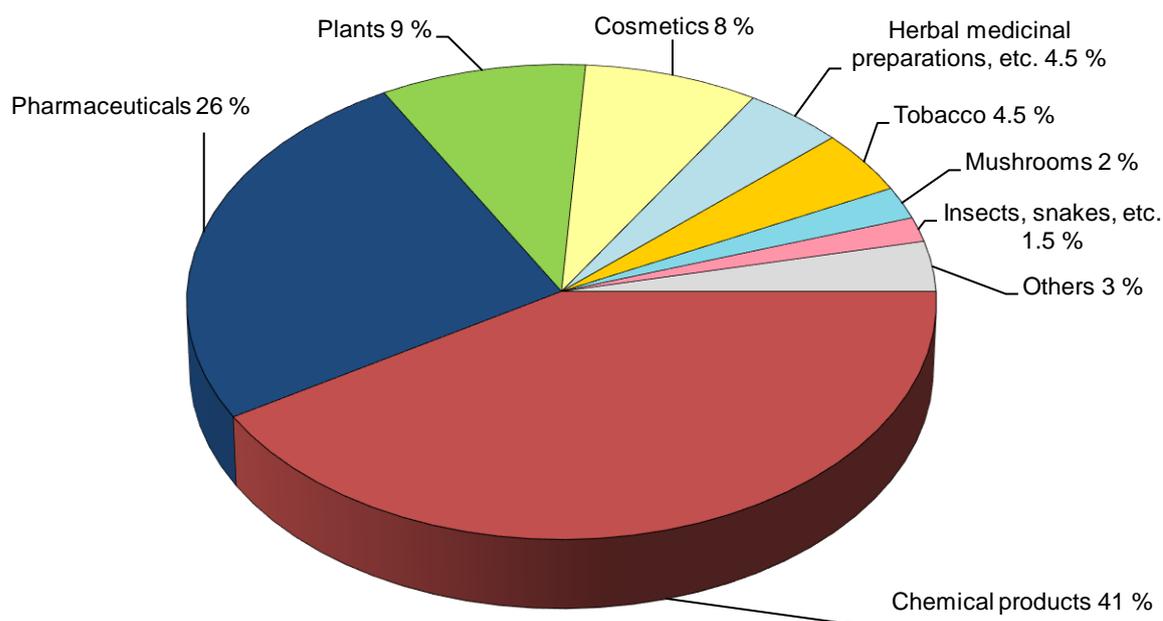
The Poisons Centre received 28 409 calls concerning children <10 years. 74% of these inquiries involved children aged 1–4 years, with a slight male predominance (Figure 5). Most of the poisoning incidents occurred at home, with ingestion being the main route of exposure (86% of cases).

**Figure 5. Age/gender (%), children <10 years (n=28 409)**



Nearly half of the inquiries concerned children who were exposed to chemicals, mainly household products or products for personal care. Pharmaceuticals were implicated in 26% of cases and plants in 9%. The remainder included tobacco, mushrooms, insects and snakes (Figure 6).

**Figure 6. Poisoning agent (%), children <10 years (n=28 409)**



### 3.1.1.1. Chemicals/chemical products, children <10 years

The chemicals/chemical products most frequently involved in poisoning incidents among children <10 years are listed below (% of total number of inquiries about chemical products in brackets)

- **Cleaning products:** 37%, e.g., dishwasher detergents (10%), toilet bowl cleaners, washing-up liquids, all-purpose cleaners, and laundry powder (3–5% each).
- **Disinfectants:** 8%, e.g., products containing ethanol/isopropanol.

- **Household products:** 6%, e.g., acetic acid (3%), table salt.
- **Pesticides:** 4%, e.g., insecticides, rodenticides.
- **Batteries:** 3%, e.g., button (disc) batteries, cylindrical batteries.
- **Paints:** 3%, e.g., interior paints, kids' paints.
- **Air fresheners:** 3%, e.g., fragrance sticks, room sprays.

The number of paediatric poisoning incidents involving chemical products was 11 746. The number of inquiries about disinfectants, mainly ethanol-containing products, was also high in 2021 but lower than in 2020. A large majority of these incidents (92%) was considered harmless. In total, the estimated risk was minor in 87% of paediatric cases and could be dealt with at the accident site. The remaining 13% of cases were referred to medical care, or advice was provided directly to healthcare personnel treating the patient.

The most common reason for a recommendation to seek medical care was swallowing button disc batteries, which can cause severe damage if they become lodged in the oesophagus or stomach.

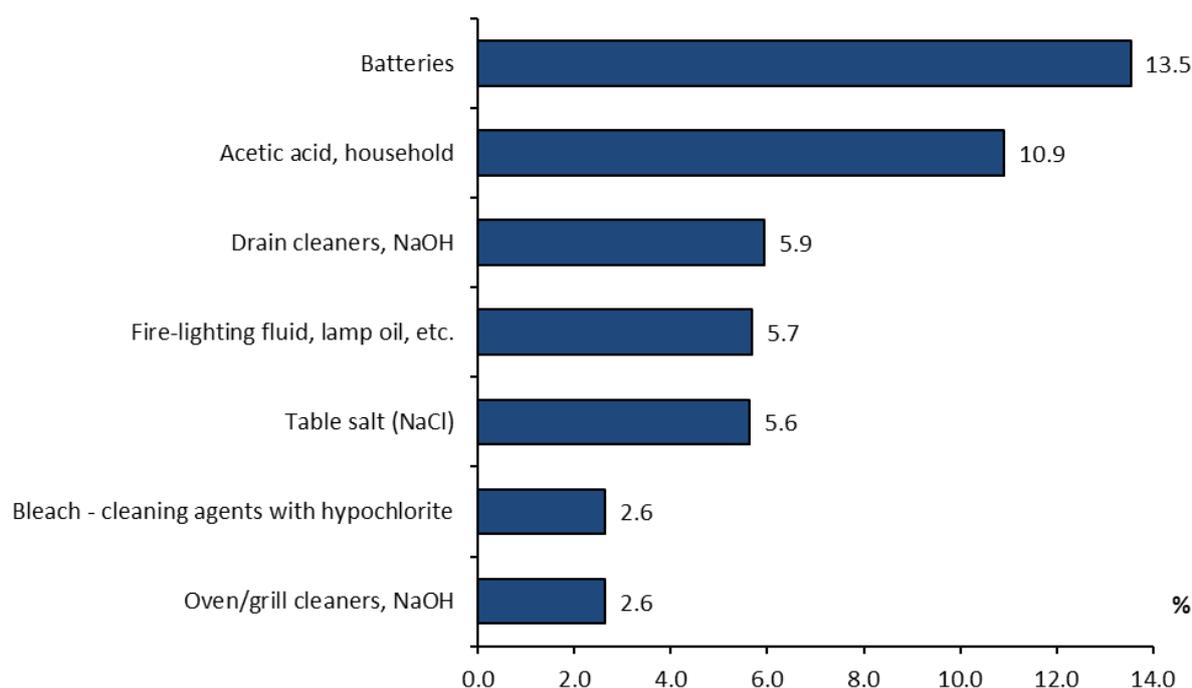
In 36% of the calls that led to a recommendation to seek medical care, the child had ingested a corrosive product, e.g., 24% household acetic acid, drain cleaners, bleaching/cleaning agents with hypochlorite, and descaling products.

The number of inquiries about incidents with acetic acid among children continued to increase. This could be attributed to the rising popularity of using acetic acid for cleaning and other purposes. 45% of acetic acid exposures among children were considered as hazardous.

Another common type of product that often requires hospital care among children is petroleum distillates (e.g., fire lighting fluid, lamp oil, fuel, white spirit), which can cause chemical pneumonitis if aspirated. However, these cases have decreased from around 400–500 annually in the beginning of the 2000s to around 100 in the 2020s.

The most common chemical products with the potential for a serious medical outcome are listed in Figure 7.

**Figure 7. Most common chemicals/chemical agents leading to medical care (% of total number of chemical products leading to medical care) among children <10 years (n=1 566)**



Among cosmetics and products for personal care (2 226 inquiries in total), the most commonly-reported were skin lotions, liquid soap/shampoo, dental care products with fluoride and nail care products containing acetone/acetate. 92% of these incidents were considered harmless. Among the cases requiring medical care, wart-removing agents and nail care products were the most commonly-involved type of product (each accounting for 20% of cases).

### 3.1.1.2. Pharmaceuticals, children <10 years

The pharmaceuticals that were most frequently involved in poisoning incidents in children <10 years are listed below (% of total number of inquiries about pharmaceuticals in brackets).

- **Analgesics, including anti-inflammatory and anti-rheumatic pharmaceuticals:** 22%, e.g., paracetamol (13%), ibuprofen (5%), diclofenac.
- **Psychoanaleptics including ADHD pharmaceuticals, antidepressants:** 8%, e.g., sertraline, methylphenidate, lisdexamfetamine.
- **Dermatological preparations:** 7%, e.g., hydrocortisone.
- **Cough preparations:** 7%, e.g., bromhexine, ethylmorphine.
- **Antihistamines for systemic use:** 6%, e.g., desloratadine.
- **Cardiovascular drugs:** 5%, e.g., beta blockers.

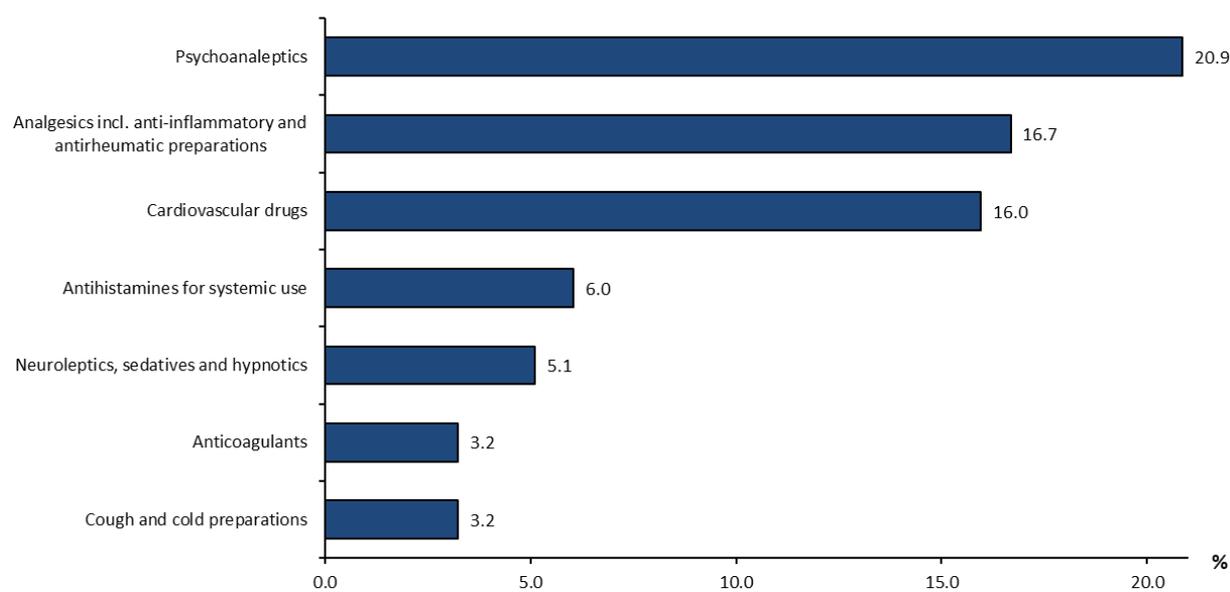
7 235 inquiries related to pharmaceuticals and children were received in 2021. In addition, there were 1 248 inquiries about herbal preparations and food supplements, mainly vitamins (not included in the above list).

The risk of poisoning was considered minor in 87% of the incidents with pharmaceuticals among children. In 13% of inquiries the caller was recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. The most common pharmaceuticals in these cases

are listed in Figure 8. Some rather toxic pharmaceuticals, such as anti-malarials, do not appear in this figure, as the total number of poisoning cases in this category was low.

Psychoanaesthetics were the most frequently-occurring class of drugs among children referred to hospital. Among these are antidepressants such as venlafaxine and sertraline and ADHD medications such as methylphenidate and lisdexamfetamine. Additionally, ingestions of guanfacin (used for ADHD but classified as a cardiovascular drug) are relatively common and often require medical treatment.

**Figure 8. Most common pharmaceuticals leading to medical care (%) among children < 10 years (n=959)**



### 3.1.1.3. Plants, children <10 years

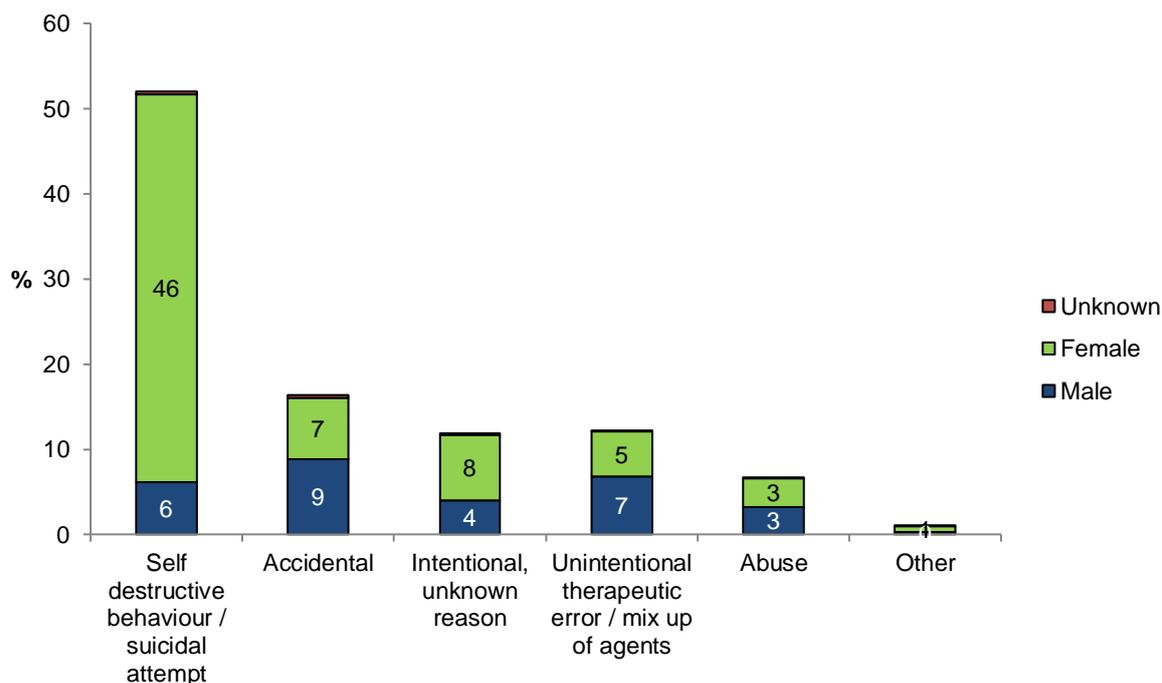
Child poisoning cases involving plants are usually harmless. In 5% of the 2 631 inquiries the caller was recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. The number of inquiries concerning plants has decreased for many years, especially those about harmless plants. A contributing factor might be that information about plants on the website of the Poisons Centre is considered sufficient in many cases.

The most common inquiries with poisonous plants involved lily of the valley, laburnum flower, yew, monkshood, mezereon and foxglove. Other cases that caused symptoms, although not poisonings, were cases where children had ingested plants with irritating sap (e.g., *Zamioculcas*) or had got irritating sap in their eyes.

### 3.1.2. Poisonings/exposures in adolescents 10–19 years old

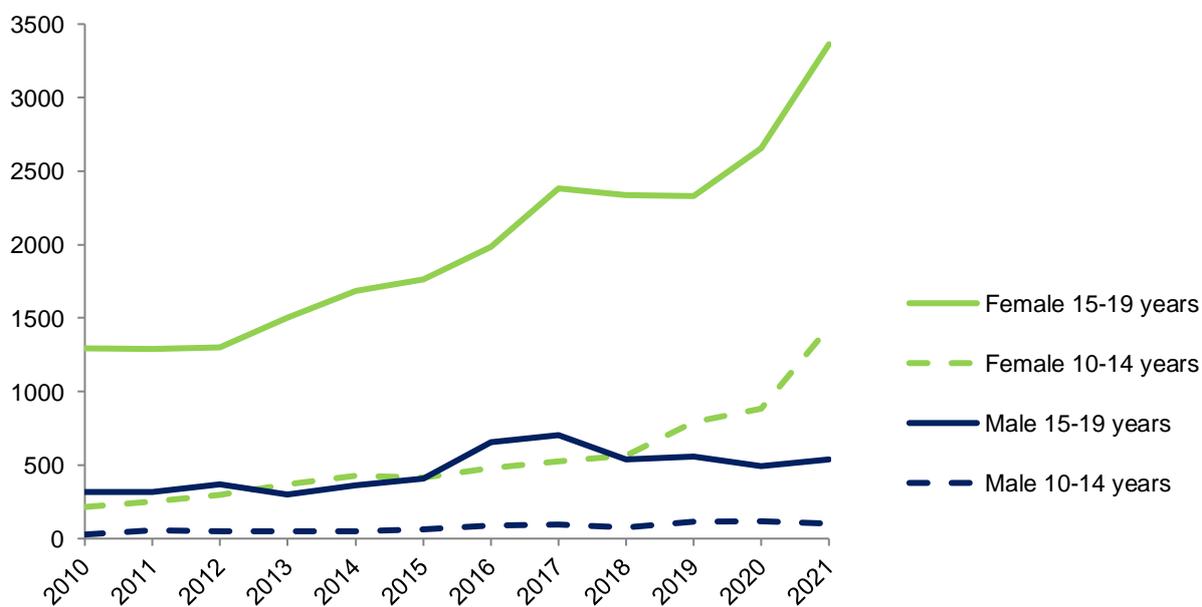
The total number of inquiries to the poisons centre concerning adolescents 10–19 years was 10 526. Of these inquiries, 52% related to attempted suicide or self-harm, in most cases with pharmaceuticals and with a large female predominance (88%). In additionally 12% of the cases the overdose was intentional, but with unclear purpose. 28% of the inquiries were due to accidents (including unintentional therapeutic errors) and 8% to abuse. Figure 9 shows the different reasons for poisoning.

**Figure 9. Reason for poisoning, adolescents 10–19 years old (n=10 526)**



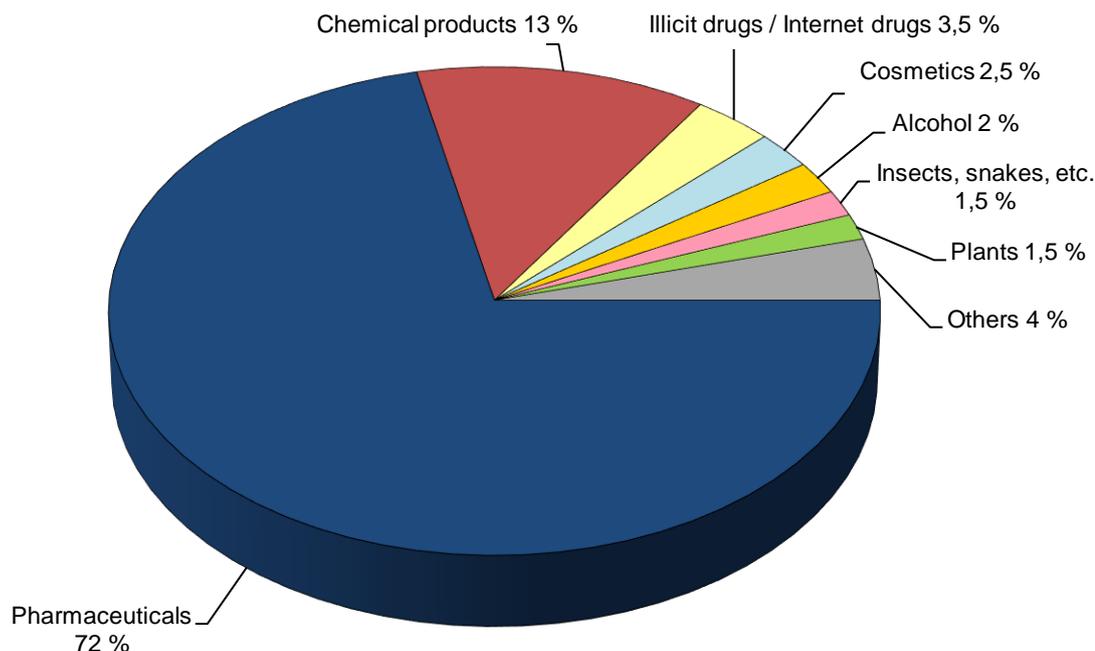
Notable for 2021, there was a large increase of inquiries concerning self-destructive poisonings in female adolescents, especially in younger girls (10–14 years), with a 62% increase on 2020. There was no increase among boys. At present, no further conclusions can be drawn from Poisons Centre data. Figure 10 shows the annual number of these inquiries since 2010.

**Figure 10. Inquiries 2010–2021, self-destructive behaviour and suicidal attempts, adolescents 10–19 years**



In the adolescent group, poisoning with pharmaceuticals was most common and amounted to 72% of the inquiries. Chemicals/chemical products accounted for 13% of the calls, whereas other poisoning agents were less common (Figure 11).

**Figure 11. Poisoning agent (%), adolescents 10–19 years old (n=10 526)**



### 3.1.2.1. Pharmaceuticals, adolescents 10–19 years

Pharmaceuticals (including herbal medicine preparations) most frequently involved in poisoning incidents among adolescents 10-19 years old are listed below (% of total number of inquiries about pharmaceuticals in brackets):

- Analgesics, including anti-inflammatory and anti-rheumatics: 33%, e.g., paracetamol (21%), ibuprofen (7%), tramadol.
- Psychoanaleptics, including ADHD pharmaceuticals and antidepressants: 26%, e.g., sertraline (7%), lisdexamfetamine (5%), methylphenidate (5%), fluoxetine.
- Neuroleptics, sedatives, hypnotics: 14%, e.g., propiomazine, hydroxyzine, melatonin.
- Antihistamines for systemic use: 11%, e.g., promethazine (8%), alimemazine.

There were 7 538 inquiries about adolescents who had overdosed pharmaceuticals in 2021, a 23% increase compared to 2020. A large majority (82%) was deliberate overdoses. 70% were recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. For the remaining 30% the risk was low. The pharmaceuticals listed above were also those most frequently causing a need for hospital care.

The total number of inquiries regarding illicit drugs and internet drugs in this age group amounted to 368. Of those, 86% were recommended to seek medical care or advice was given directly to healthcare personnel treating the patient.

### 3.1.2.2. Chemicals/chemical products, adolescents 10–19 years

The chemicals/chemical products most frequently involved in poisoning incidents among adolescents 10-19 years old are listed below (% of total number of inquiries about chemical products in brackets).

- Cleaning products: 21%, e.g., bleach containing hypochlorite, drain cleaners, pool chemicals, all-purpose cleaners.

- Disinfectants: 16%, e.g., products containing ethanol/isopropanol (13%).
- Gases 10%, e.g., fire gases, exhaust gases, nitrous oxide.
- Fuel: 9%, e.g., petrol/gasoline (7%).

The risk of poisoning was considered minor in 62% of the 1 340 inquiries and could be addressed at the site of the incident. The remaining 38% of inquiries resulted in a recommendation to seek medical care, or advice was given directly to healthcare personnel treating the patient. The most common chemical products that lead to medical attendance in this age group were gases (e.g., propane/butane, carbon monoxide, fire gases), disinfectants with ethanol/isopropanol and corrosive products (e.g. cleaning/bleaching agents with hypochlorite, 24% acetic acid or drain cleaners).

A majority of the incidents was accidental. Half of the accidental cases were by ingestion and half by inhalation/eye exposure. 28% of the cases were intentional. Most of the intentional exposures concerned ingestion (77%) but inhalation was also relatively common (17%).

Inquiries about cosmetics/products for personal care (263 inquiries) most commonly involved products for nail, hair or skin care. Incidents with these products are in most cases harmless, but for instance eye exposure involving hair colouring may constitute a risk.

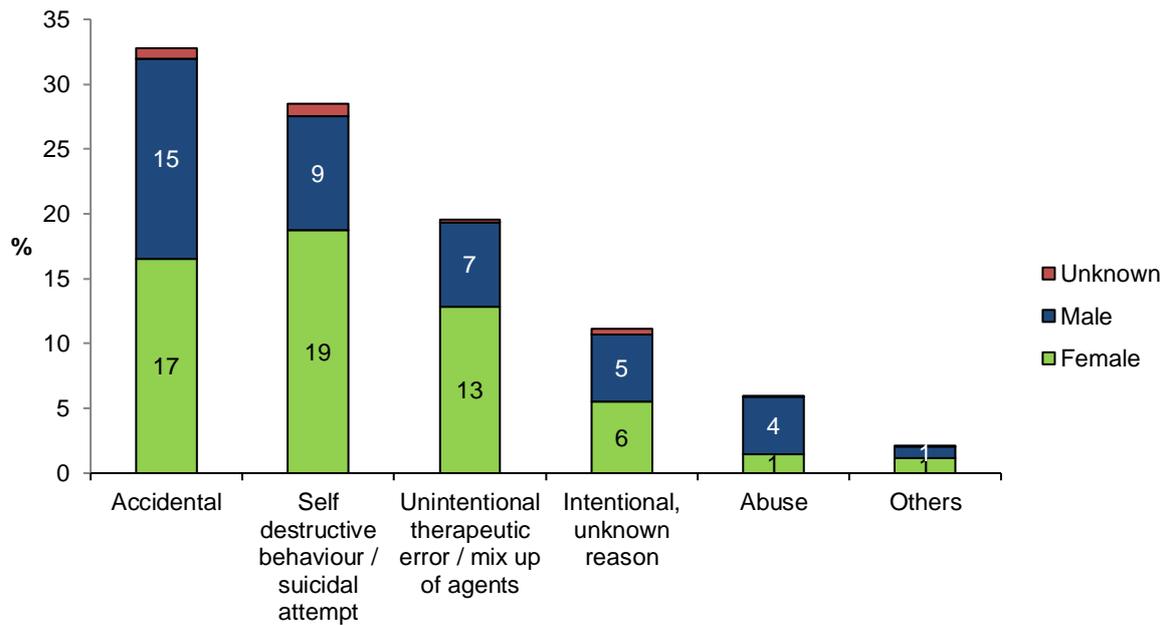
### **3.1.3. Poisonings/exposures in adults**

Among adults, various types of accidental exposures, including workplace accidents and incidents during do-it-yourself activities, caused close to one third of the 50 490 inquiries (Figure 12). However, 46% concerned intentional exposures, including suicide attempts and abuse, mainly with pharmaceuticals or illicit drugs/internet drugs. A large majority of the serious poisonings belongs to this category.

One fifth of the inquiries concerned therapeutic errors/mix up of agents. In this group, unintentional overdosing of pharmaceuticals at home dominated (mostly double dose), which rarely results in poisoning.

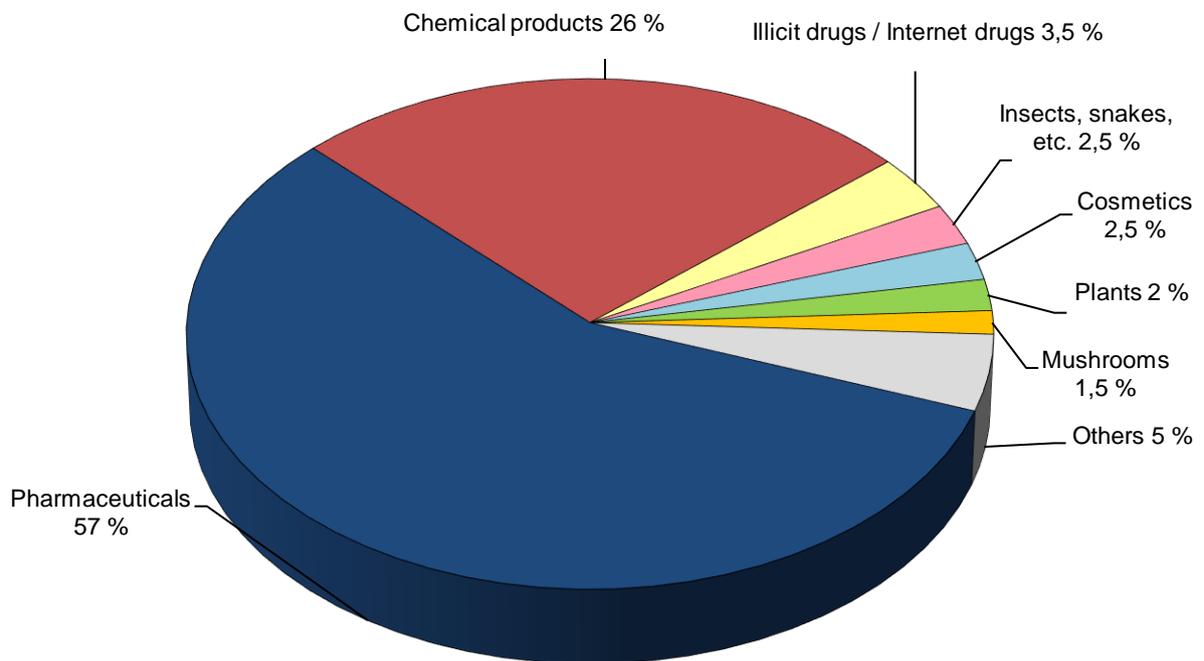
The pattern of inquiries among adults was largely similar in 2021 compared to 2020. There was a 10% increase in inquiries about abuse or recreational use whereas self-destructive poisonings slightly decreased.

**Figure 12. Reason for poisoning (%), adults (n= 50 490)**



Over half (57%) of all adult poisoning inquiries were related to pharmaceuticals. Inquiries about chemicals/chemical products constituted 26%, illicit drugs/internet drugs 3.5%, whereas plants, cosmetics, insects, snakes and mushrooms constituted a minority of all incidents (Figure 13).

**Figure 13. Poisoning agent (%), adults (n= 50 490)**



### 3.1.3.1. Pharmaceuticals, adults

The pharmaceuticals most frequently involved in poisoning incidents among adults are listed below (% of total number of questions about pharmaceuticals in brackets)

- Analgesics, including anti-inflammatory and anti-rheumatic pharmaceuticals: 22%, e.g., paracetamol (11%), tramadol, ibuprofen, oxycodone.
- Neuroleptics, sedatives, hypnotics: 21%, e.g., zopiclone (3%), propiomazine (3%), quetiapine, lithium, alprazolam.
- Psychoanaleptics, including antidepressants, ADHD pharmaceuticals: 14%, e.g., sertraline (3%), venlafaxine, bupropion.
- Cardiovascular drugs: 9%, e.g., metoprolol, amlodipine.
- Antihistamines for systemic use: 8%, e.g., promethazine (5%), alimemazine.
- Antiepileptics: 5%, e.g., lamotrigine, pregabalin.

Among the 28 740 inquiries concerning adults who had ingested pharmaceuticals, 61% were recommended to seek medical care, or advice was given directly to healthcare personnel treating the patient. In this group there were many serious cases of overdosing. For the remaining 39%, the risk of poisoning was considered relatively low. Many of the harmless incidents were related to persons who accidentally had taken a double dose of a medicine.

In adults, the number of inquiries related to illicit drugs or internet drugs amounted to 1 785. Out of these, 89% were recommended to seek medical care or advice was given directly to medical personnel treating the patient. In most of the cases, the drugs involved were well-known substances such as amphetamine, cocaine, ecstasy and LSD. Only a small part of the inquiries concerned new designer drugs, i.e. the opposite situation compared to 5-10 years ago.

### **3.1.3.2. Chemicals/chemical products – adults**

The chemicals/chemical products most frequently involved in poisoning incidents among adults are listed below (% of total number of questions about chemical products in brackets):

- Cleaning products: 26%, e.g., washing-up liquid, cleaning/bleaching agents with hypochlorite, drain cleaners with NaOH, descaling agents with acid.
- Gases: 13%, e.g., fire gases, carbon monoxide/exhaust fumes.
- Disinfectants: 12%, e.g., products containing ethanol/isopropanol.
- Industrial chemicals: 7%, e.g., acids, sodium hydroxide, ammonia.
- Car products: 6%, e.g., antifreeze/brake fluids, lubricants.
- Fuel: 6%, e.g., petrol/gasoline, fire-lighting fluid/lamp oil.

The risk of poisoning was considered relatively low in 65% of the 13 265 inquiries about adult exposures and care at the incident site was sufficient. For the remaining 35% the caller was recommended to seek medical care, or advice was given directly to healthcare personnel treating the patient.

The products that most frequently required medical care were those containing ethanol/isopropanol (e.g., disinfectants, solvents), gases (e.g., fire gases, carbon monoxide/exhaust fumes, nitrous oxide) and corrosive products (cleaning/bleaching agents with hypochlorite, drain cleaners, alkaline cleaning agents, descaling agents).

In more than half of the inquiries related to chemicals, the route of exposure was through inhalation or eye contact. Accidental ingestion of a chemical product was also relatively common (32%). Intentional poisoning accounted for 13% of the inquiries.

In cases where disinfectants or antifreeze agents caused severe poisoning requiring hospitalization, the products had in most cases been consumed as a substitute for alcohol. In 2021, disinfectants

containing ethanol were implicated in a third of all cases of deliberate poisoning with chemicals. There was also a large increase of inquiries about recreational use of nitrous oxide (laughing gas). Long-term use of nitrous oxide can cause neurotoxicity.

Inquiries about cosmetics/products for personal care (1 200 calls in total) mostly involved skin care products, hair colouring agents and dental care products. Incidents with these products are mostly harmless, but anti-wart agents can be corrosive, and eye exposure to hair colouring or some nail care products may constitute a risk.

## **4. Animal poisonings**

The Poisons Centre previously offered treatment advice concerning poisoning of animals, depending on available time and access to information. However, since July 1, 2018, inquiries about animals are referred to a veterinarian. In 2021, a total of 1 017 calls concerning animals were referred.

## **5. Assignments and collaborations**

### **5.1. International**

- Member of European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) Working Group on Poisons Centre Activities/European Regulatory Issues.
- Referee assignments for a number of international journals.
- Member of the European Chemical Industry Council (CEFIC) ICE Integration group. In collaboration with IKEM –Innovation and Chemical Industries in Sweden.

### **5.2. Publications**

1. Runesson B, Jonsson A, Lindeman E. Dietylenglykolförgiftning – första kända svenska fallet presenteras. [Diethylene glycol poisoning – the first known Swedish case] *Läkartidningen* 2021; 118
2. Olsson de Capretz P, Lindeman E, Dryver E. ABC om Syra–bastolkning på akuten. [Analysis of acid-base disturbances in the emergency department] *Läkartidningen* 2021; 118
3. Thunander Sundbom L, Fornstedt Wallin B, Wändel Liminga U, Nordmark Grass J, K Jönsson A, Nurminen ML. Sedativa antihistaminer – risk för allvarlig intoxikation. [Sedating antihistamines – risk of severe intoxication] *Läkartidningen* 2021; 118

### **5.3. Published abstracts**

1. Lindeman E, Kálmán S, Rosengren Holmberg J. Swedes like their O-juice from Florida and their E-juice from California. Poster at the 41st Congress of EAPCCT. Virtual congress. *Clin Toxicol* 2021;59:6

2. Gustafsson A, Arvidsson S, Lindeman E. Fooled by adrenaline: a pyrogenic-like reaction during treatment of a common European viper bite. Poster at the 41st Congress of EAPCCT. Virtual congress. Clin Toxicol 2021;59:6
3. Lindeman E, Östberg L, Svanhagen A-C. Intravenous iron overdose: don't trust the blood levels. Poster at the 41st Congress of EAPCCT. Virtual congress. Clin Toxicol 2021;59:6
4. Kader A, Myllymäki L. Torsade de pointes following repeated massive loperamide ingestions. Poster at the 41st Congress of EAPCCT. Virtual congress. Clin Toxicol 2021;59:6

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