

Swedish Poisons Information Centre Annual Report 2023



Giftinformationscentralen
SWEDISH POISONS INFORMATION CENTRE

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1. Summary

- During 2023 the telephone service at the Swedish Poisons Information Centre answered 108 301 telephone calls, an increase of 6,3% compared to 2022.
- The number of calls from the general public increased slightly, whereas those from the healthcare system continued to increase markedly during 2023 (+9% compared to 2022). This is part of a long-term trend which has resulted in a considerably higher share of inquiries from the healthcare professionals (41% of all calls to the centre) compared to 2010 (26%). These inquiries are generally more complex than those from the general public.
- Paracetamol (acetaminophen) is still by far the most common drug responsible for poisonings.
- The increase of inquiries concerning self-destructive poisonings in female adolescents (10-19 years) that has been seen during the last two years, have slowed down. During 2023 the curve has flattened even though it is too early to draw any conclusion of this yet.
- The Swedish Poisons Information Centre has, together with the Swedish Chemical Agency, worked for a restriction of the private use of alkaline drain cleaners (caustic soda or lye). The legislation will come into force in 2025.
- The number of calls from the healthcare related to nitrous oxide (laughing gas) has continued to increase, from 434 to 589 during 2023 compared to 2022. The Swedish Poisons Information Centre has done extensive work in informing and educating the general public and the healthcare about the risks of abusing of laughing gas.
- During 2023, the Swedish Poisons Information Centre published 3 scientific articles and 6 abstracts.
- The Poisons Centre has provided about 130 seminars and lectures in 2023 for Swedish or international audiences.
- In September the Swedish Poisons Information Centre hosted the yearly conference for Poisons Centres in the Nordic and Baltic countries.

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 poisons centre data. The documents are evaluated by senior physicians and pharmacists at the Poisons 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 three-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 Poisons 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.

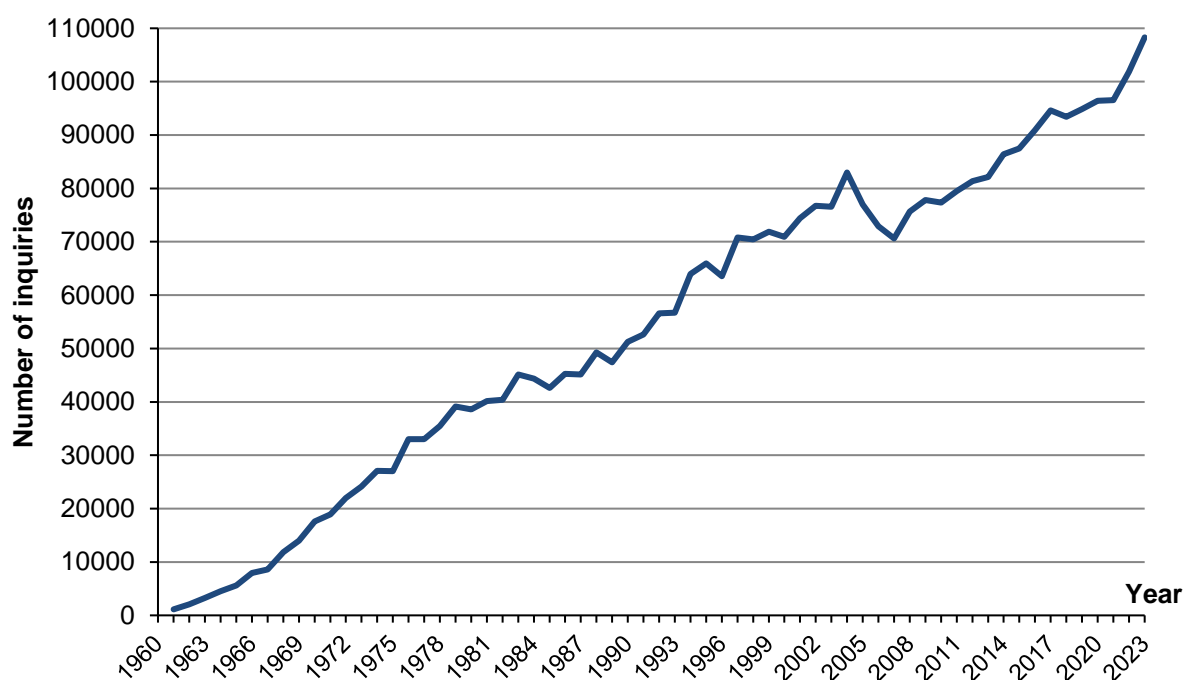
3. Telephone Service

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 2023 are illustrated in Figure 1.

Figure 1. Number of calls to Swedish Poisons Information Centre 1961–2023



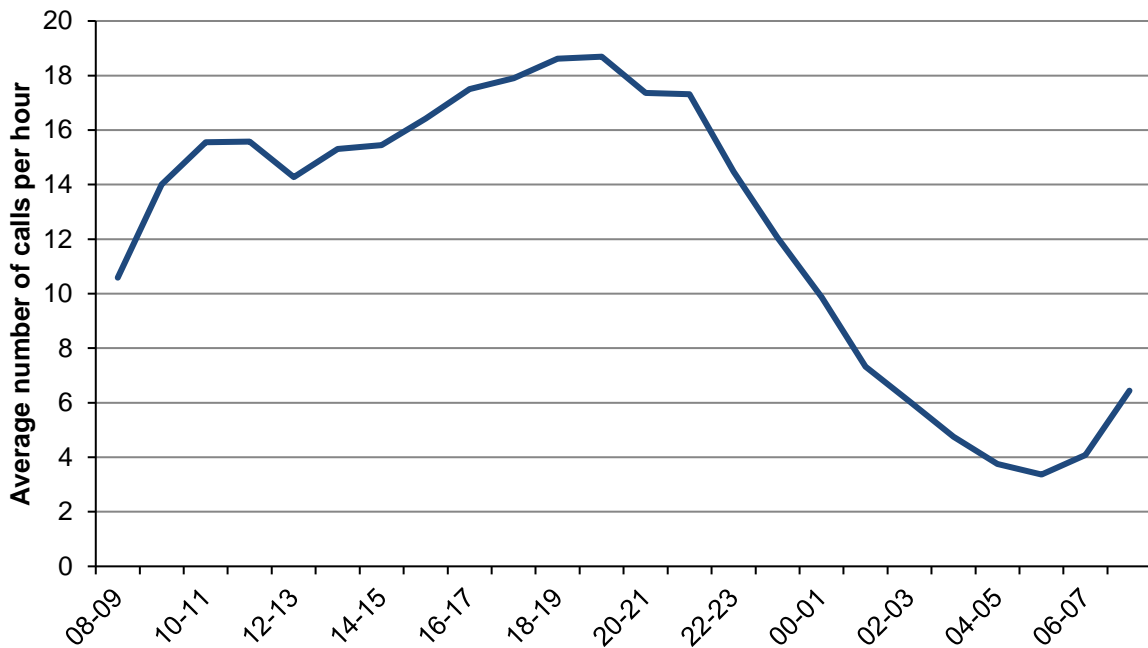
The total number of calls in 2023 was 108 301. This corresponds to a 6.3% increase compared to 2022. Calls from the healthcare services were up 8%. Night-time calls increased by 9%.

More than a third of the inquiries (41 208) were from the healthcare services. Of these, 70% were from hospitals, 22% from national emergency number operators or paramedics and 7% from primary care providers. The inquiries from hospitals are often medically complex and the Poisons Centre’s anaesthesiologists are involved in approximately one quarter of these.

The average number of calls per 24-hour period was 297, with the main peak of incoming calls between 5 and 8 p.m. The 24-hour variation in number of calls is shown in

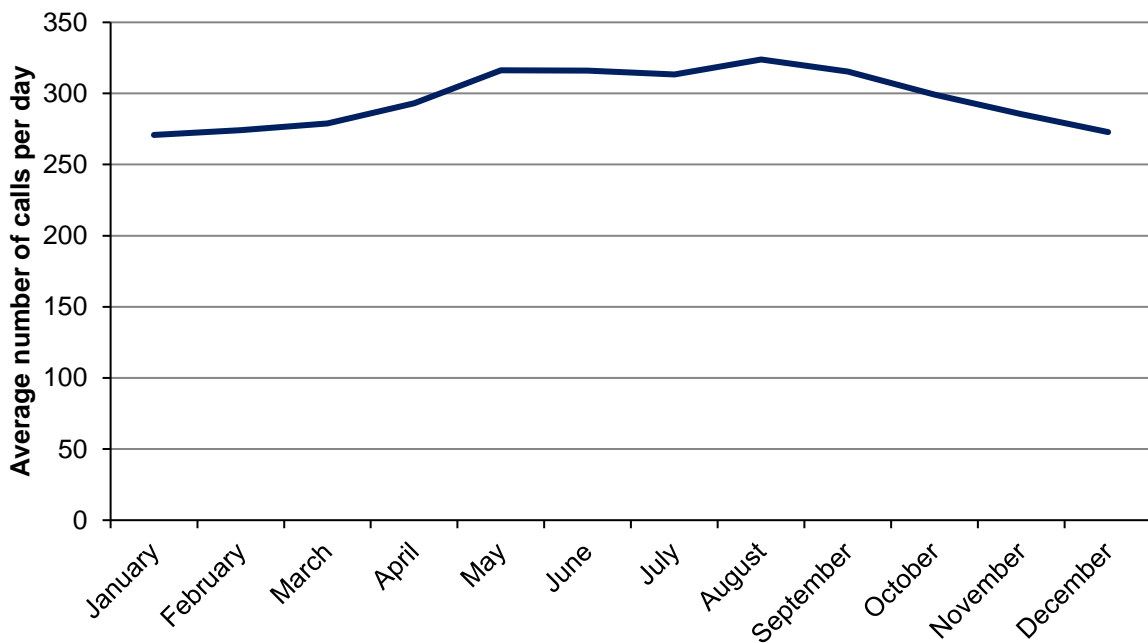
Figure 2.

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



Generally, the most intense period for the Poisons Centre is May to September, 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 August 2023, the average daily number of calls reached a record high of 324. In accordance with the trend of recent years, there was a high number of inquiries about viper bites in 2023 (942 in total). The number of inquiries about mushrooms was close to the yearly average (1 662 in total).

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



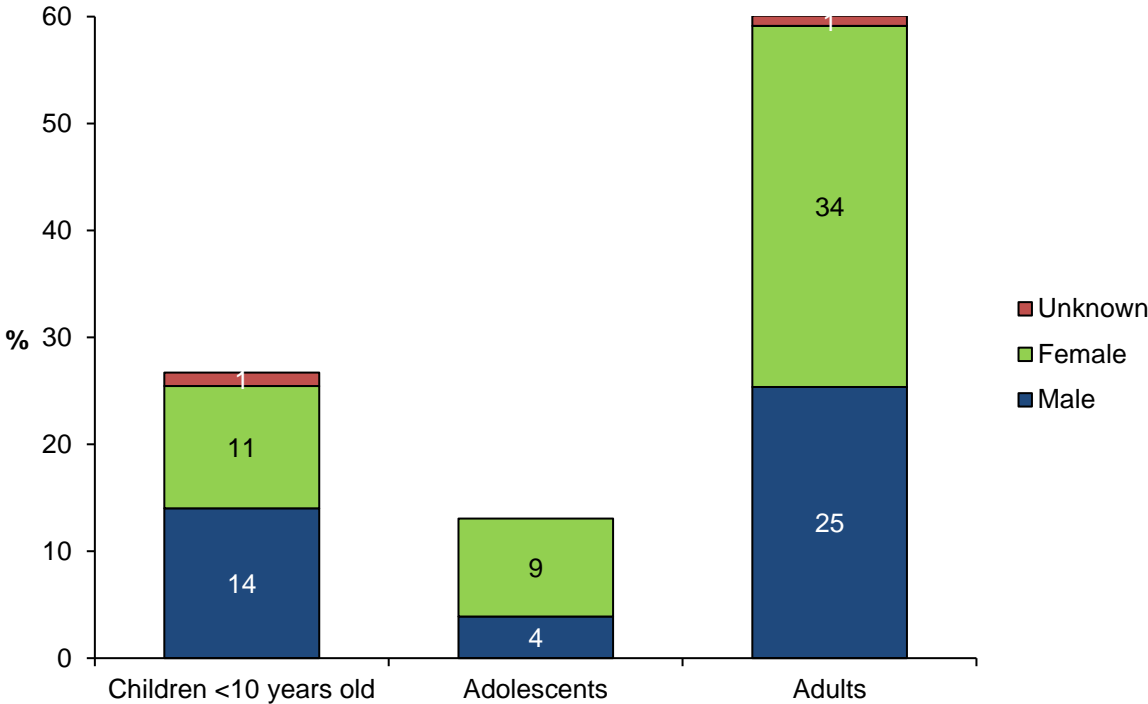
Of the 108 301 calls the Centre received during 2023, 100 658 concerned human poisonings or exposures. The remainder was requests for general information (6 738 calls) or concerned animals (905 calls).

3.1. Human Poisonings/Exposures

A majority of the 100 658 calls concerning human poisonings/exposures came from the general public (57%), 41% 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.

60% of the inquiries concerned adults, 13% adolescents (10–19 years) and 27% children below 10 years. In 2023 there was a quite large increase in calls about adults (+10%). There has been a notable increase of inquiries about adolescents in recent years but less so during 2023 (+3.6%). Inquiries about children were up 1.3%. The distribution is illustrated in Figure 4.

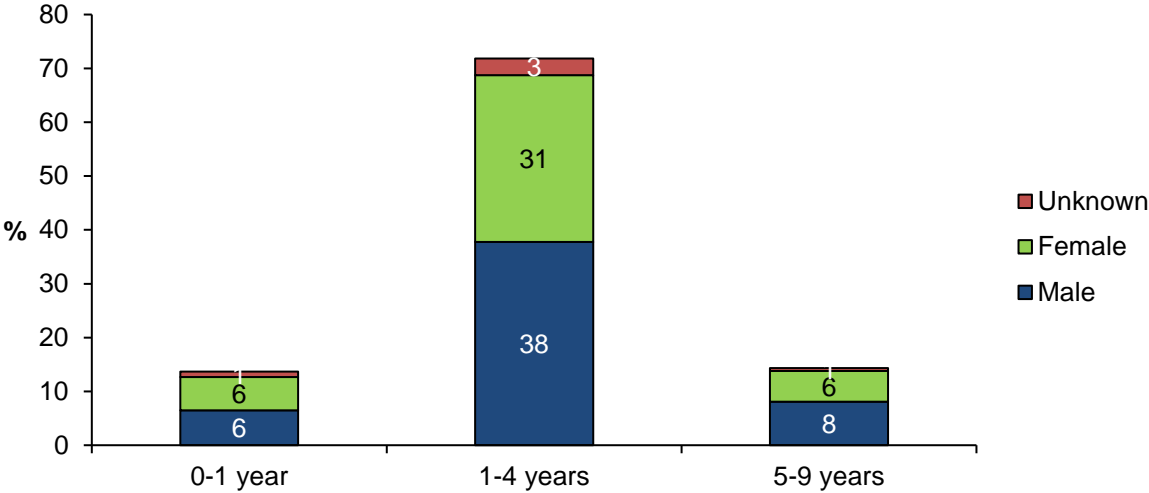
Figure 4. Age and gender (%), inquiries about human poisonings/exposures (n=100 658)



3.1.1. Poisonings/exposures in children <10 years

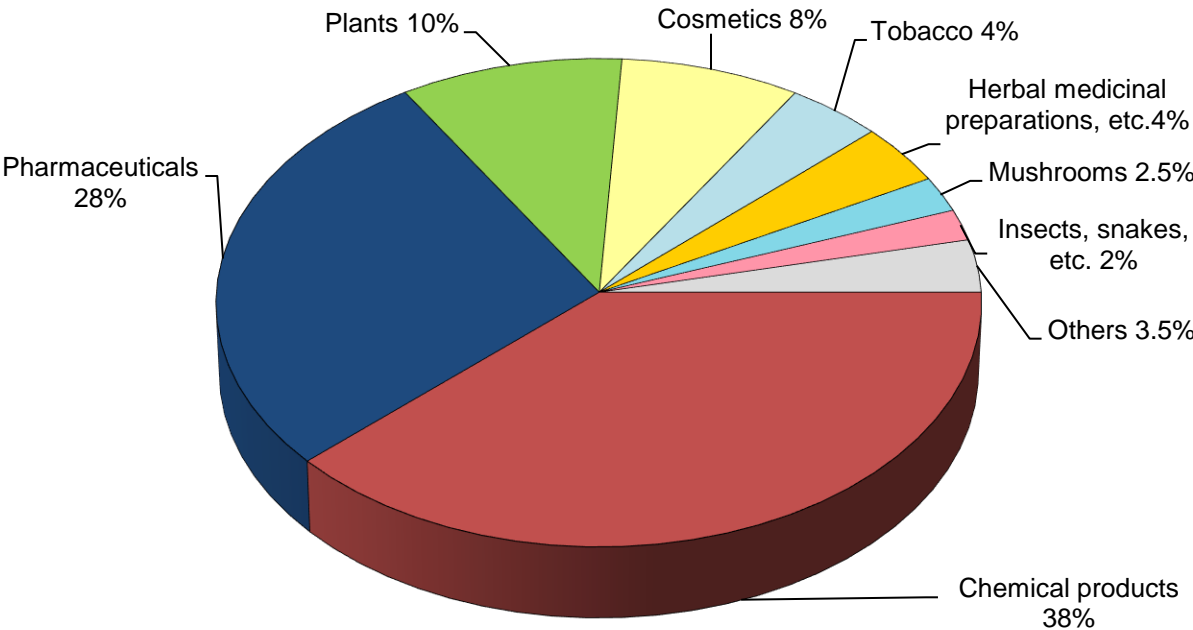
The Poisons Centre received 26 896 calls concerning children <10 years. 72% of these inquiries involved children aged 1–4 years, with a slight male predominance (Figure 5). Most of the poisoning incidents occurred at home, with ingestion being the main route of exposure (85% of cases).

Figure 5. Age/gender (%), children <10 years (n=26 896)



Nearly half of the inquiries concerned children who were exposed to chemicals, mainly household products or products for personal care. Pharmaceuticals were implicated in 28% of cases and plants in nearly 10%. The remainder included tobacco, mushrooms, insects and snakes (Figure 6).

Figure 6. Poisoning agent (%), children <10 years (n=26 896)



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: 36%, e.g., dishwasher detergents (12%), toilet bowl cleaners, washing-up liquids, all-purpose cleaners, and laundry powder (3–4% each).
- Household products: 6%, e.g., acetic acid (3%), table salt (3%).

- Disinfectants: 6%, e.g., products containing ethanol/isopropanol.
- Pesticides: 5%, e.g., insecticides, rodenticides.
- Air fresheners: 4%, e.g., fragrance sticks, room sprays.
- Paints: 3%, e.g., interior paints, kids' paints.
- Writing and drawing materials: 3 %, e.g. pens, crayons.
- Batteries: 3%, e.g., button (disc) batteries, cylindrical batteries.

The number of paediatric poisoning incidents involving chemical products was 10 288. The estimated risk was minor in 88% of paediatric cases and could be dealt with at the accident site. The remaining 12% of cases were referred to medical care, or advice was provided directly to healthcare personnel treating the patient.

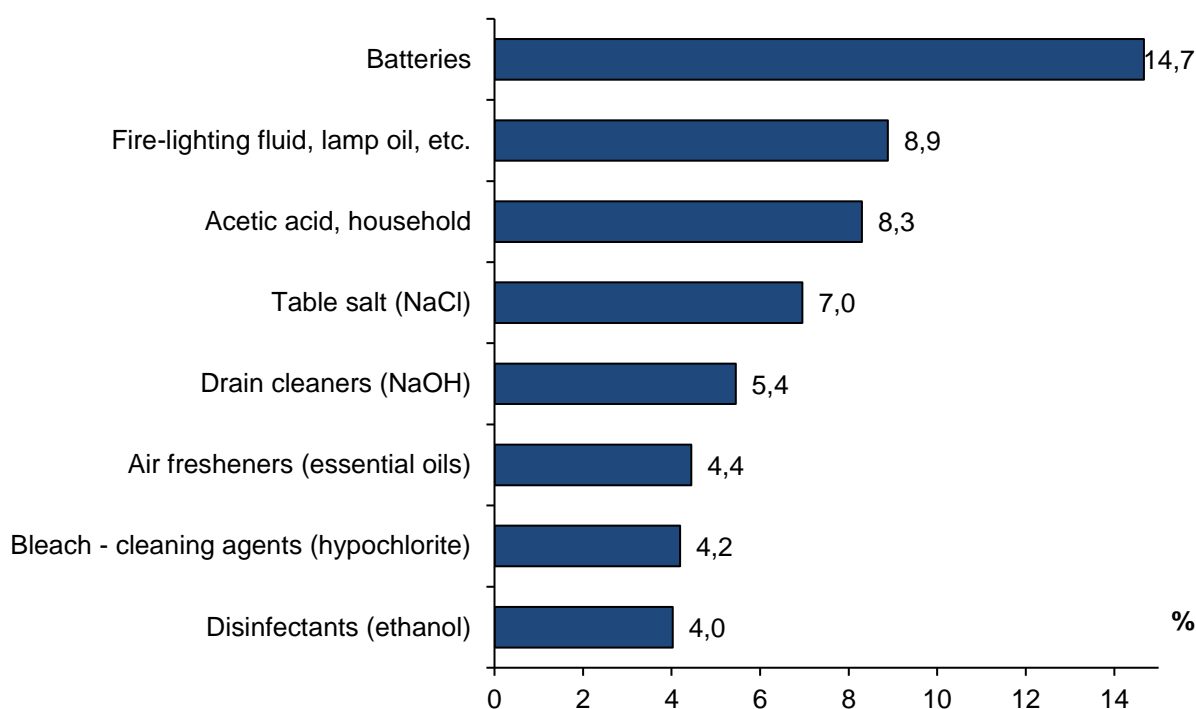
The most common reason for a recommendation to seek medical care was swallowing button disc batteries, which can cause severe damage if they become lodged in the oesophagus or stomach.

In 33% 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.

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=1 193)



Among incidents with cosmetics and products for personal care, e.g. skin lotions, liquid soap/shampoo and dental care products (2 130 inquiries in total), 94% were considered harmless. Among the cases requiring medical care, wart-removing agents were the most commonly-involved type of product 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: 26%, e.g., paracetamol (16%), ibuprofen (7%), diclofenac.
- Psychoanaleptics including ADHD pharmaceuticals, antidepressants: 8%, e.g., methylphenidate, lisdexamfetamine, sertraline.
- Cardiovascular drugs: 6%, e.g., beta blockers.
- Antihistamines for systemic use: 6%, e.g., desloratadine.
- Dermatological preparations: 6%, e.g., hydrocortisone.
- Cough preparations: 6%, e.g., bromhexine, ethylmorphine.

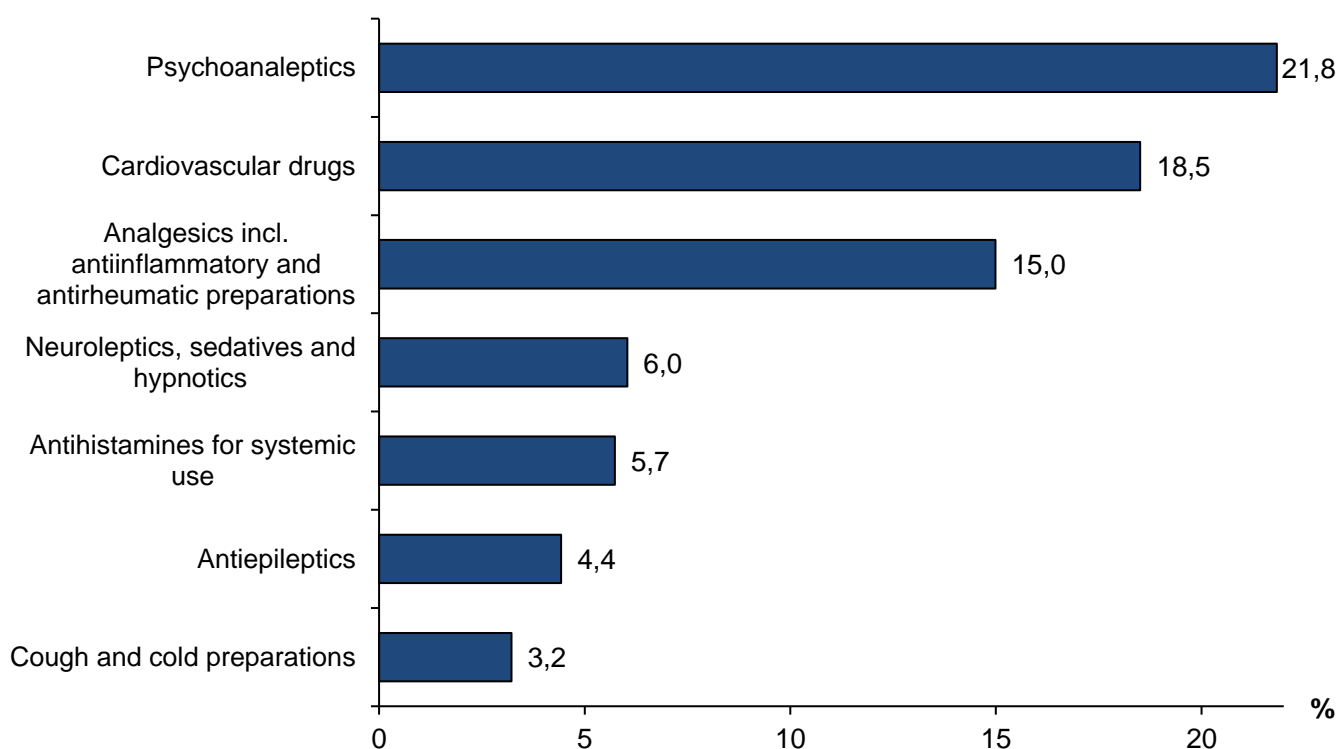
7 511 inquiries related to pharmaceuticals and children were received in 2023. In addition, there were 1 074 inquiries about herbal preparations and food supplements, mainly vitamins (not included in the above list).

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.

Psychoanaleptics were the most frequently-occurring class of drugs among children referred to hospital. Among these are antidepressants such as venlafaxine and bupropion 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=994)



3.1.1.3. Plants, children <10 years

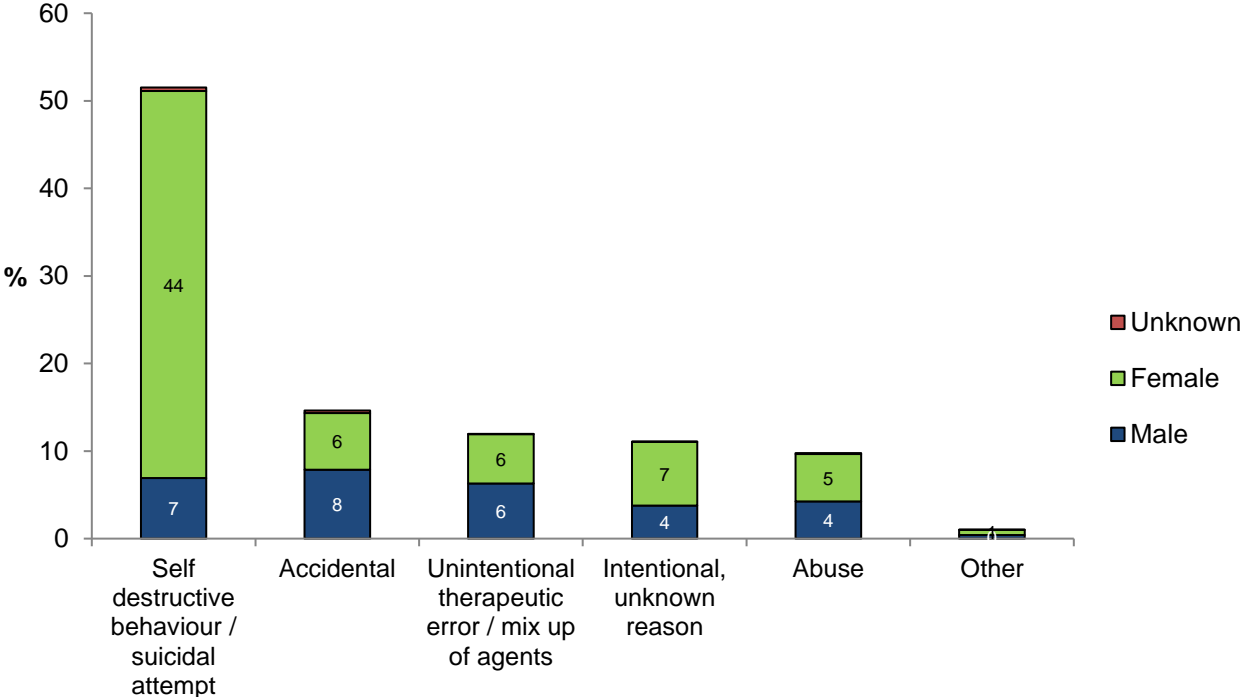
Child poisoning cases involving plants are usually harmless. In 4% of the 2 638 inquiries the caller was recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. The number of inquiries concerning plants has decreased for many years, especially those 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

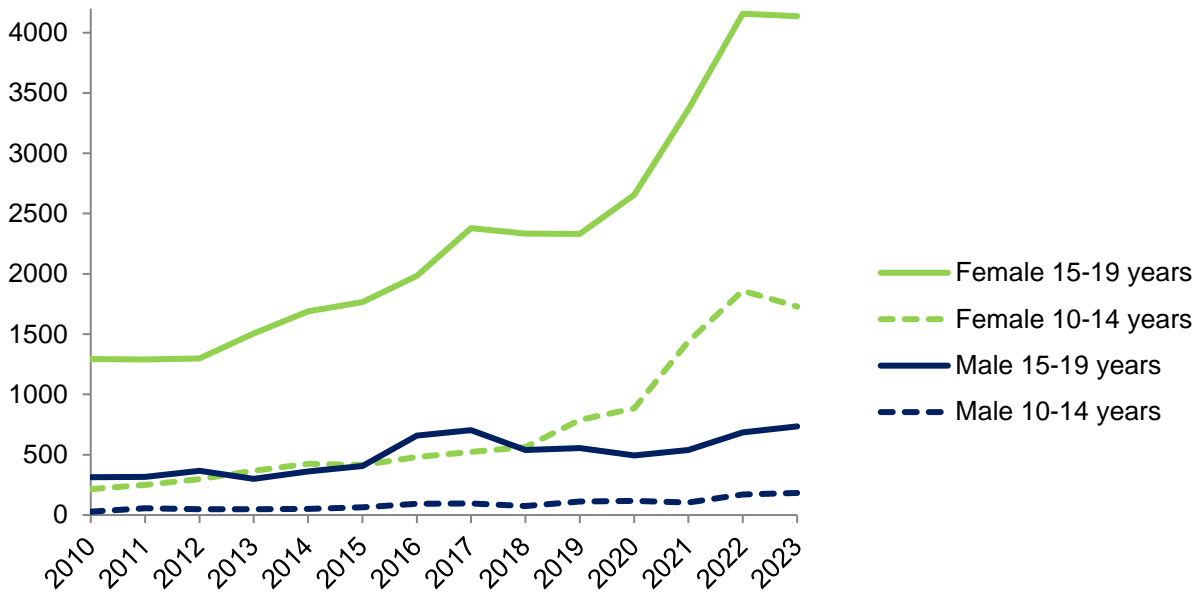
The total number of inquiries to the poisons centre concerning adolescents 10–19 years was 13 277. Of these inquiries, 52% related to attempted suicide or self-harm, in most cases with pharmaceuticals and with a large female predominance (86%). In additionally 11% of the cases the overdose was intentional, but with unclear purpose. 27% of the inquiries were due to accidents (including unintentional therapeutic errors) and nearly 10% to abuse. Figure 9 shows the different reasons for poisoning.

Figure 9. Reason for poisoning, adolescents 10–19 years old (n=13 277)



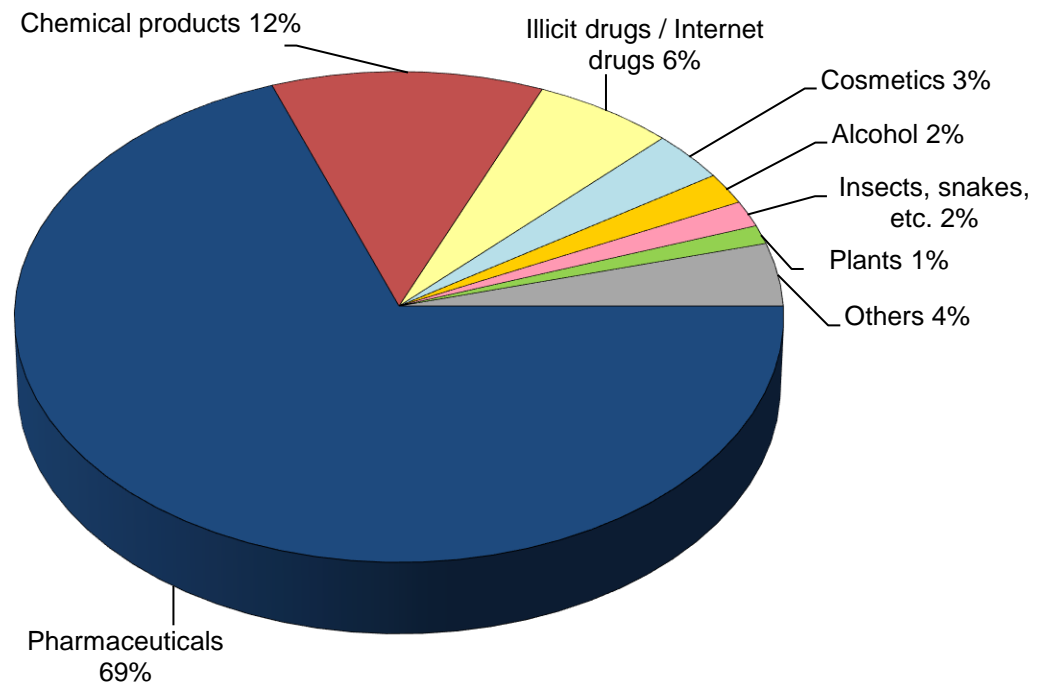
A large increase of inquiries concerning self-destructive poisonings in female adolescents is notable in recent years, also in younger girls (10–14 years). In 2023 however, there were slightly fewer inquiries about girls compared to the previous year. The number of calls about self-destructive poisonings in male adolescents is notably lower but continued to increase slightly in 2023. Figure 10 shows the annual number of these inquiries since 2010.

Figure 10. Inquiries 2010–2023, self-destructive behaviour and suicidal attempts, adolescents 10–19 years



In the adolescent group, poisoning with pharmaceuticals was most common and amounted to 69% of the inquiries. Chemicals/chemical products accounted for 12% of the calls, whereas other poisoning agents were less common (Figure 11).

Figure 11. Poisoning agent (%), adolescents 10–19 years old (n=13 277)



3.1.2.1. Pharmaceuticals, adolescents 10–19 years

Pharmaceuticals 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 drugs and anti-rheumatics: 30%, e.g., paracetamol (19%), ibuprofen (6%), tramadol.

- Psychoanaleptics, including ADHD pharmaceuticals and antidepressants: 26%, e.g., sertraline (7%), lisdexamfetamine (6%), methylphenidate (5%), fluoxetine.
- Neuroleptics, sedatives, hypnotics: 15%, e.g., hydroxyzine, propiomazine, quetiapine.
- Antihistamines for systemic use: 12%, e.g., promethazine (9%), alimemazine.

There were 9 215 inquiries about adolescents who had overdosed pharmaceuticals in 2023. This was almost the same number as the year before but corresponds to a 50% increase since 2020. A large majority (82%) was deliberate overdoses. 73% were recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. For the remaining 27% 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 818 compared to 540 in 2022. Of those, 86% were recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. During the year, there were especially many calls about ecstasy as well as vaping- and candy products containing semisynthetic cannabinoids.

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: 19%, e.g., bleach containing hypochlorite, drain cleaners, pool chemicals, all-purpose cleaners.
- Gases: 17%, e.g., nitrous oxide (7%), propane/butane, fire gases, exhaust gases.
- Disinfectants: 11%, e.g., products containing ethanol/isopropanol.
- Car products: 5%, e.g., antifreeze.
- Fuel: 5%, e.g., petrol/gasoline.

The risk of poisoning was considered minor in 50% of the 1 585 inquiries and could be addressed at the site of the incident. The remaining 50% 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., nitrous oxide, propane/butane), corrosive products (e.g., cleaning/bleaching agents with hypochlorite, 24% acetic acid or drain cleaners) and disinfectants with ethanol/isopropanol.

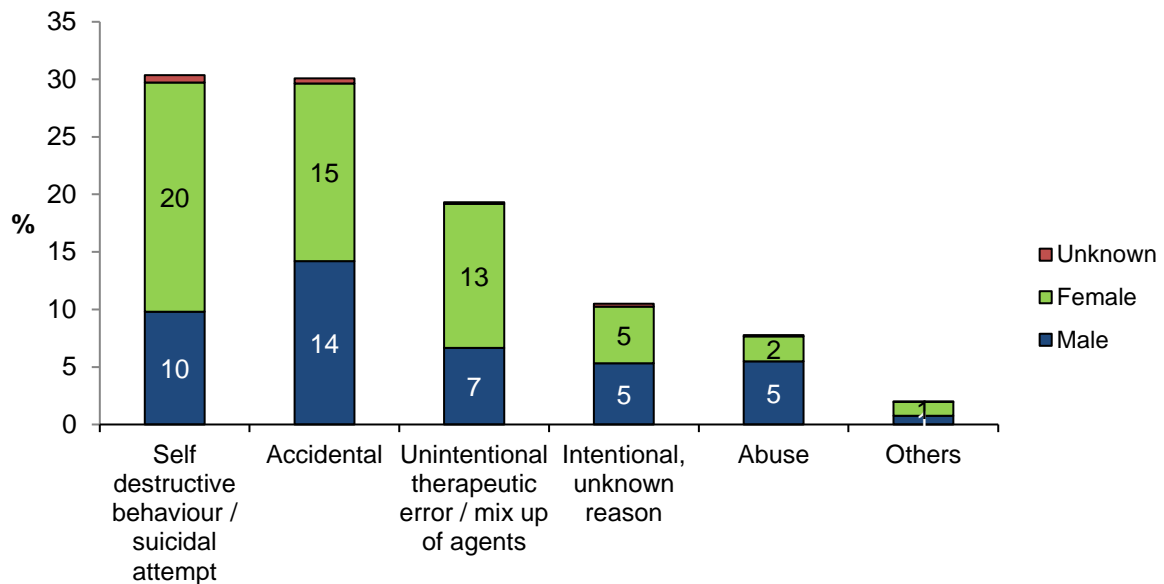
A majority of the incidents with chemicals was accidental. 38% of the accidental cases were by ingestion, 26% were eye exposure and 22% inhalation. 37% of the cases were intentional. Most of the intentional exposures concerned ingestion (67%) but inhalation was also relatively common (29%).

Inquiries about cosmetics and products for personal care (439 inquiries among adolescents) most commonly involved products for hair, nail or skin care. In 2023, almost 20% of the 439 inquiries involved deliberate inhalation of dry shampoo which can lead to serious consequences. Accidental exposures for these products are on the other hand mostly harmless, but for instance eye exposure involving hair colouring may constitute a risk.

3.1.3. Poisonings/exposures in adults

Among adults, nearly half of the 60 485 inquiries concerned intentional exposures, including suicide attempts and abuse, mainly with pharmaceuticals or illicit drugs/internet drugs (Figure 12). A large majority of the serious poisonings belongs to this category.

Figure 12. Reason for poisoning (%), adults (n= 60 485)

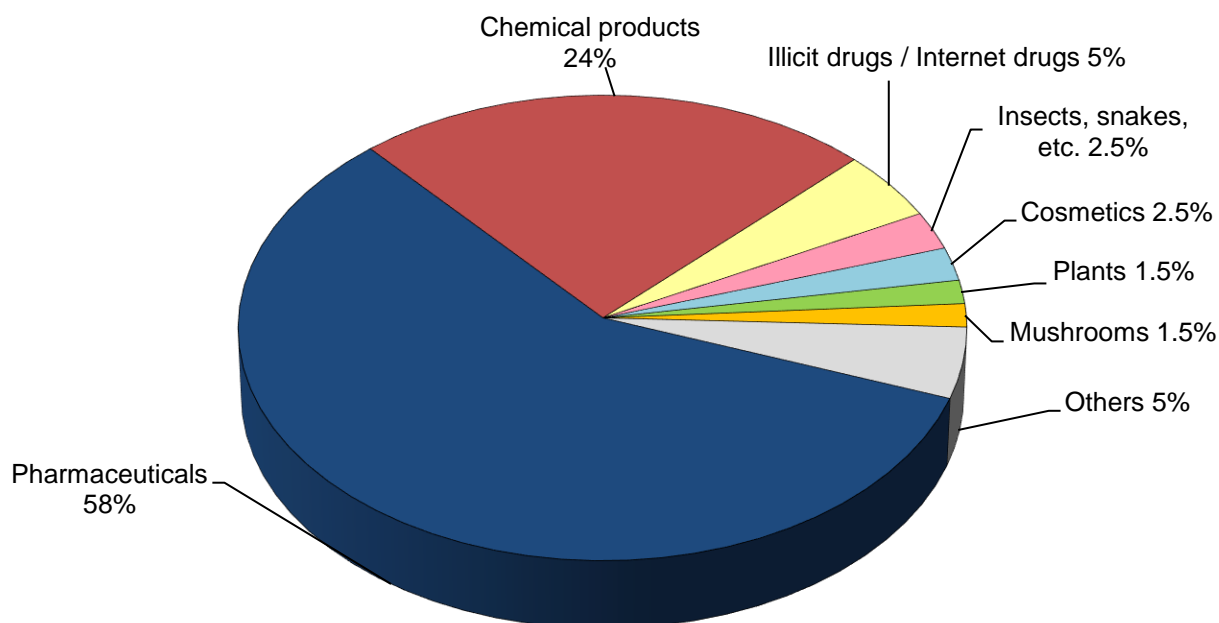


30% of the inquiries concerned various types of accidental exposures, including workplace accidents and incidents during do-it-yourself activities, and 19% concerned therapeutic errors/mix up of agents. In this group, unintentional overdosing of pharmaceuticals at home dominated (mostly double dose), which rarely results in poisoning.

In total, there was a 10% increase in inquiries about adults during the year. The largest increase was among inquiries about abuse or recreational use (+15%) while accidental exposures were up 13% and self-destructive poisonings 8%.

Over half (58%) of all adult poisoning inquiries were related to pharmaceuticals. Inquiries about chemicals/chemical products constituted 25%, illicit drugs/internet drugs 5%, whereas plants, cosmetics, insects, snakes and mushrooms constituted a minority of all incidents (Figure 13).

Figure 13. Poisoning agent (%), adults (n= 60 485)



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: 23%, e.g., paracetamol (11%), ibuprofen (3%), oxycodone, tramadol.
- Neuroleptics, sedatives, hypnotics: 22%, e.g., zopiclone (3%), propiomazine (3%), quetiapine, alprazolam, lithium.
- Psychoanaleptics, including antidepressants, ADHD pharmaceuticals: 14%, e.g., sertraline, venlafaxine, bupropion.
- Cardiovascular drugs: 10%, e.g., metoprolol, amlodipine.
- Antihistamines for systemic use: 7%, e.g., promethazine (4%), alimemazine.
- Antiepileptics: 5%, e.g., pregabalin, lamotrigine.

Among the 35 069 inquiries concerning adults who had ingested pharmaceuticals, 63% 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 37%, 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 2 915, a 25% increase on 2022 and also considerably higher than before the Covid-19 pandemic (during which calls about illicit drugs decreased). Out of these, 88% were recommended to seek medical care or advice was given directly to medical personnel treating the patient. In 55% of the cases, the drugs involved were well-known substances such as amphetamine, cocaine, ecstasy and LSD. However, inquiries about new “designer drugs” are again on the rise and amounted to 22% of the cases.

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: 25%, e.g., washing-up liquid, cleaning/bleaching agents with hypochlorite, drain cleaners with NaOH, descaling agents with acid.
- Gases: 17%, e.g., fire gases, nitrous oxide, carbon monoxide/exhaust fumes.
- Disinfectants: 10%, e.g., products containing ethanol/isopropanol.
- Industrial chemicals: 6%, e.g., acids, sodium hydroxide, ammonia.
- Car products: 6%, e.g., antifreeze/brake fluids, lubricants.
- Fuel: 5%, e.g., petrol/gasoline, fire-lighting fluid/lamp oil.

The risk of poisoning was considered relatively low in 62% of the 14 567 inquiries about adult exposures and care at the incident site was sufficient. For the remaining 38% the caller was recommended to seek medical care, or advice was given directly to healthcare personnel treating the patient.

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

Inhalation was the most common route of exposure to chemicals among adults (34%). Also ingestion (30%) and eye contact (21%) were common.

Intentional poisoning accounted for 16% of the inquiries. In cases where disinfectants or antifreeze agents caused severe poisoning requiring hospitalization, the products had in many cases been consumed as a substitute for alcohol. In 2023, disinfectants containing ethanol were implicated in 27% of all cases of deliberate poisoning with chemicals. Nitrous oxide (laughing gas) accounted for another 20%. Inquiries about recreational use of nitrous oxide continued to increase during the year. Many of the inquiries were from hospitals calling about patients with symptoms of neurotoxicity following long-term use of nitrous oxide.

Inquiries about cosmetics/products for personal care (1 397 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 2023, a total of 905 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. Nordmark Grass J, Westerbergh J, Lindeman E. Återkommande exponering för lustgas kan ge svåra skador. Läkartidningen 2022; 119
2. Helander A, Wayne Jones A, Lindeman E, Nordmark Grass J. Bättre tillgång till provsvar för toxiska alkoholer kan rädda liv. Läkartidningen 2022; 119
3. Gustafsson A, Olofsson H, Nordmark Grass J. Multiorgan failure after ingestion of acetic acid. Clin Toxicol. 2022; 60

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