Swedish Poisons Information Centre Annual Report 2024

Giftinformationscentralen
SWEDISH POISONS INFORMATION CENTRE

Contents

1. Summary

- During 2024 the telephone service at the Swedish Poisons Information Centre answered 111 978 telephone calls, an increase of 3,4% compared to 2023.
- The number of calls from the general public increased slightly, whereas those from the healthcare system continued to increase markedly during 2024 (+7% compared to 2023). 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. During the night, calls from health care professionals are more frequent than calls from the general public (64%).
- 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 years, has after a plateau phase during 2023, once again risen. In total the inquiries concerning self-destructive poisonings in female adolescents have increased by more than 50% since 2019.
- The number of calls from the healthcare related to nitrous oxide (laughing gas) has continued to increase, from 589 to 1167 during 2024 compared to 2023. The Swedish Poisons Information Centre has done extensive work in informing and educating the general public and the healthcare about the risks of abusing laughing gas and also taken part of a legislation process.
- During 2024, the Swedish Poisons Information Centre published three scientific articles and seven abstracts.
- The Poisons Centre has provided more than 100 seminars and lectures in 2024 for Swedish or international audiences, mainly in healthcare.
- The Poisons Centre has been assigned a governmental mission to inform about the risks of use of recreational inhalants (i.e. butane and propane) This assignment has resulted in different actions and information campaigns, reaching professionals all over the country.

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 human exposure and 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.

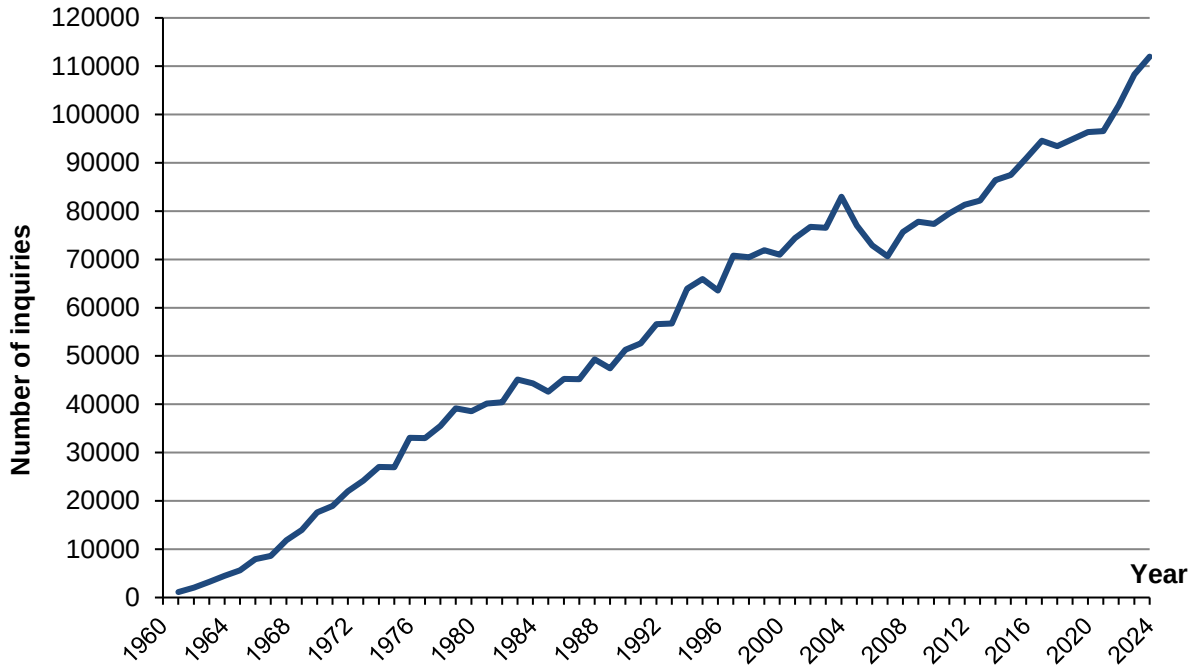
3. Telephone Service

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 2024 are illustrated in Figure 1.

Figure 1. Number of calls to Swedish Poisons Information Centre 1961–2024

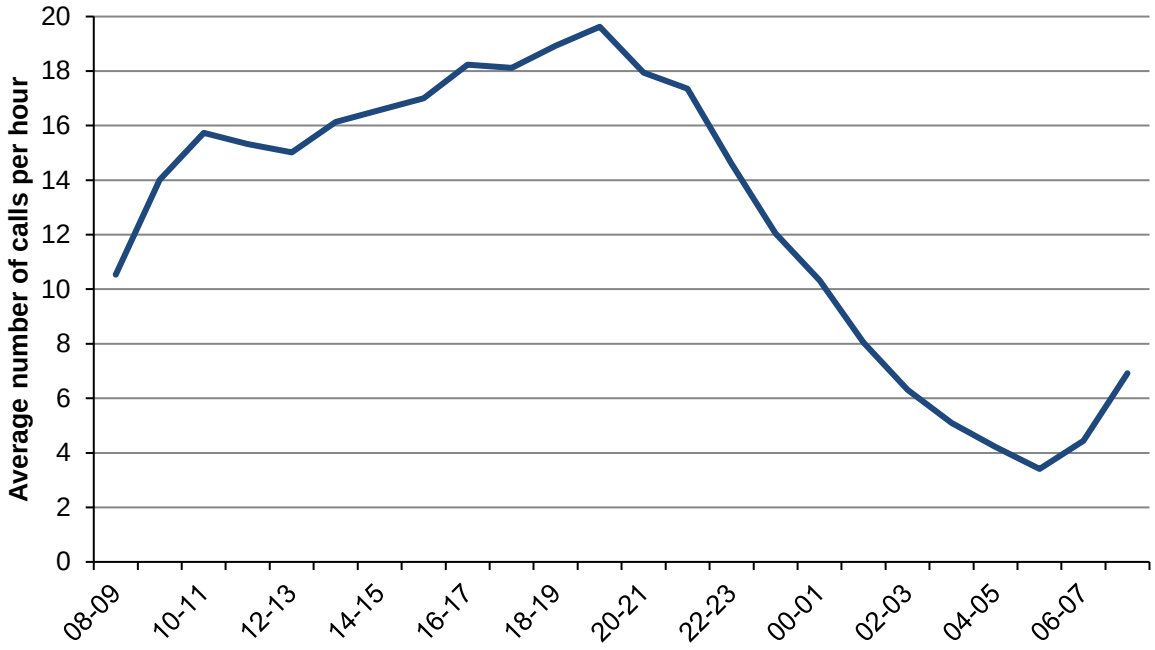


The total number of calls in 2024 was 111 978. This corresponds to a 3.4% increase compared to 2023. Calls from the healthcare services were up 7%. Night-time calls increased by 6%.

Nearly 40% of the inquiries (44 058) were from the healthcare services. Of these, 67% were from hospitals, 26% 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.

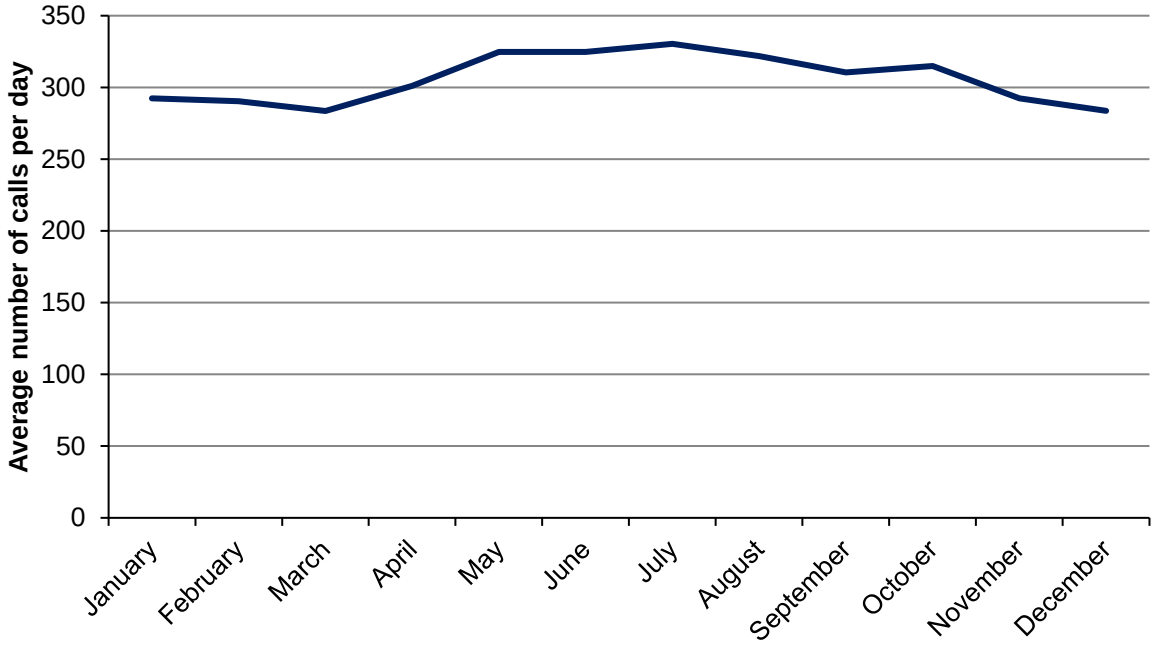
The average number of calls per 24-hour period was 306, with the main peak of incoming calls between 5 and 8 p.m. The 24-hour variation in number of calls is shown in Figure 2.

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



Generally, the most intense period for the Poisons Centre is May to October, 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. However, the seasonal fluctuation has become less pronounced over the years because the predominance of calls about pharmaceuticals, chemicals and substances of abuse has increased. In accordance with the trend of recent years, there was a high number of inquiries about viper bites in 2024 (928 in total). The number of inquiries about mushrooms was slightly below the yearly average (1 333 in total).

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



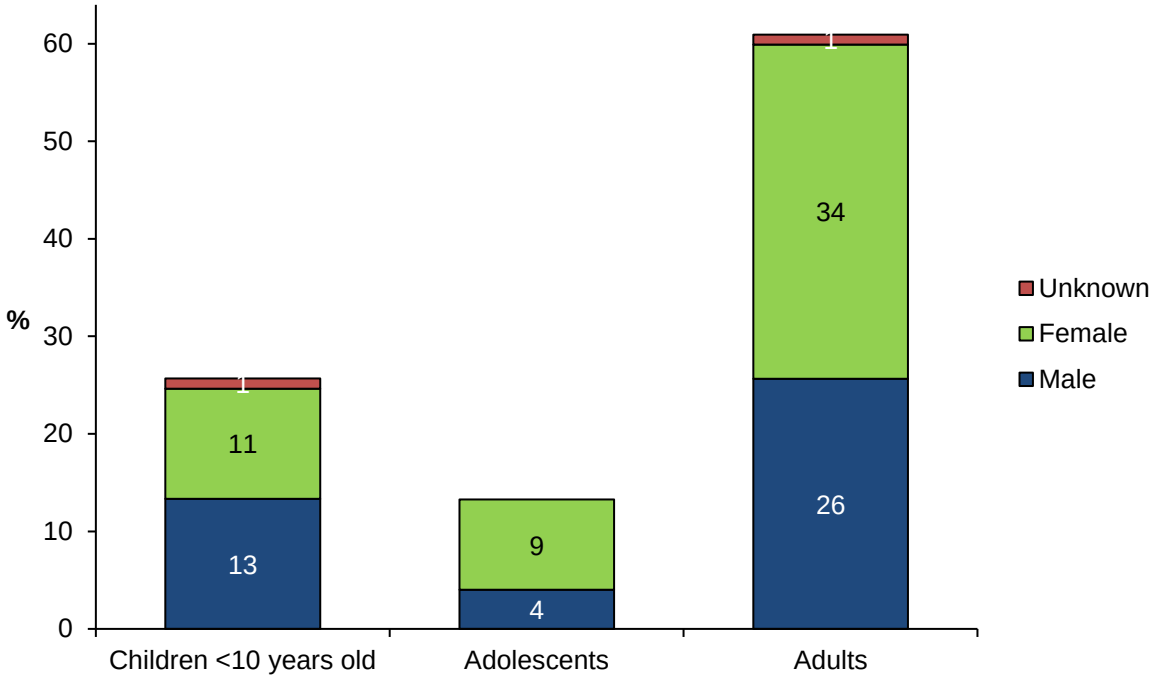
Of the 111 978 calls the Centre received during 2024, 104 427 concerned human poisonings or exposures. The remainder was requests for general information (6 731 calls) or concerned animals (820 calls).

3.1. Human Poisonings/Exposures

A majority of the 104 427 calls concerning human poisonings/exposures came from the general public (56%), 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.

61% of the inquiries concerned adults, 13% adolescents (10–19 years) and 26% children below 10 years. In 2024 calls about adults as well as adolescents increased by 5%. Inquiries about children were down 0.2%. The distribution is illustrated in Figure 4.

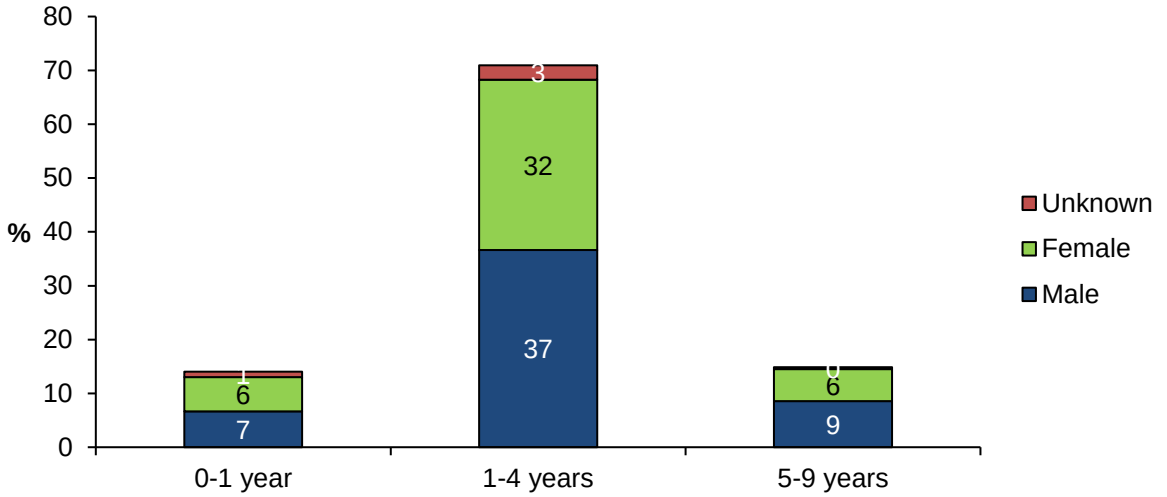
Figure 4. Age and gender (%), inquiries about human poisonings/exposures (n=104 427)



3.1.1. Poisonings/exposures in children <10 years

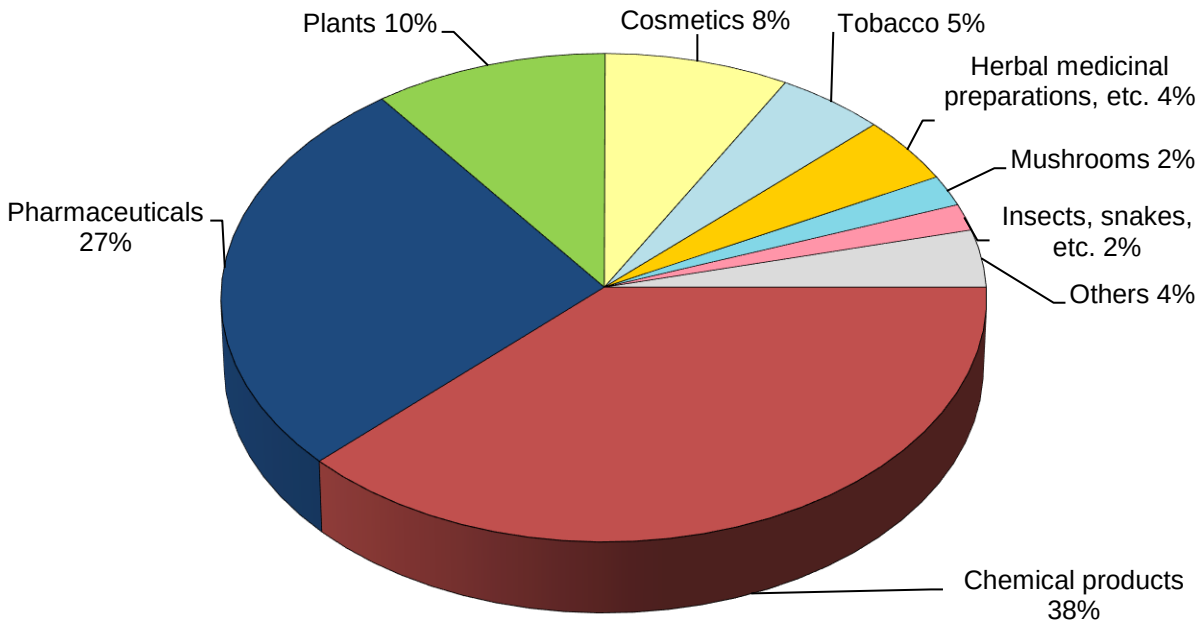
The Poisons Centre received 26 835 calls concerning children <10 years. 71% of these inquiries involved children aged 1–4 years, with a slight male predominance (Figure 5). Most of the poisoning incidents occurred at home, with ingestion being the main route of exposure (86% of cases).

Figure 5. Age/gender (%), children <10 years (n=26 835)



Nearly half of the inquiries concerned children who were exposed to chemicals, mainly household products or products for personal care. Pharmaceuticals were implicated in 27% of cases and plants in 10%. The remainder included tobacco, mushrooms, insects and snakes (Figure 6).

Figure 6. Poisoning agent (%), children <10 years (n=26 835)



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: 35%, e.g., dishwasher detergents (10%), all-purpose cleaners, toilet bowl cleaners, laundry powder, and washing-up liquids (3–4% each).
- Household products: 8%, e.g., acetic acid (4%), table salt (3%).

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

The number of paediatric poisoning incidents involving chemical products was 10 149. The estimated risk was minor in 89% of paediatric cases and could be dealt with at the accident site. The remaining 11% of cases were referred to medical care, or advice was provided directly to healthcare personnel treating the patient.

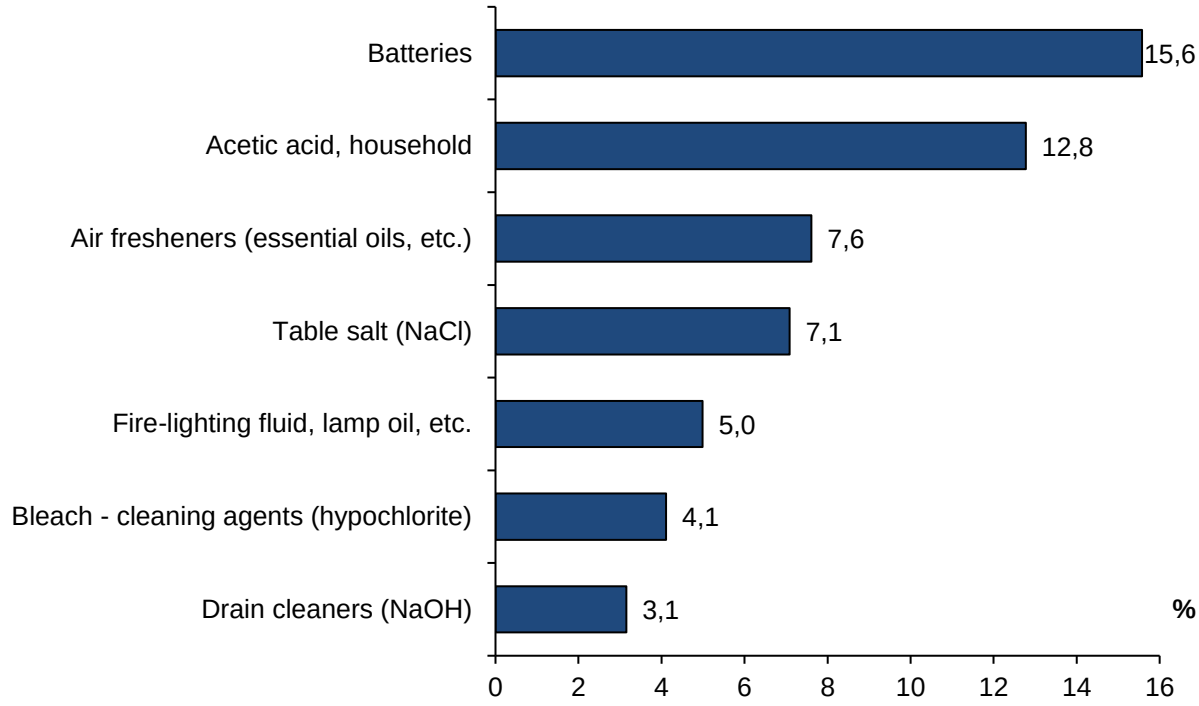
The most common reason for a recommendation to seek medical care was swallowing button disc batteries, which can cause severe damage if they become lodged in the oesophagus or stomach.

In 34% 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 by around 80% since the beginning of the 2000s, a trend which continued in 2024.

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=1 143)



Among incidents with cosmetics and products for personal care, e.g. skin lotions, liquid soap/shampoo and dental care products (2 183 inquiries in total), 93% were considered harmless. Among the cases requiring medical care, wart-removing agents were the most commonly-involved type of product accounting for 12% 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: 25%, e.g., paracetamol (15%), ibuprofen (7%).
- Psychoanaleptics including ADHD pharmaceuticals, antidepressants: 8%, e.g., lisdexamfetamine, sertraline, methylphenidate.
- Cardiovascular drugs: 7%, e.g., guanfacine, beta blockers.
- Dermatological preparations: 7%, e.g., hydrocortisone.
- Antihistamines for systemic use: 5%, e.g., desloratadine.
- Cough preparations: 5%, e.g., bromhexine, ethylmorphine.

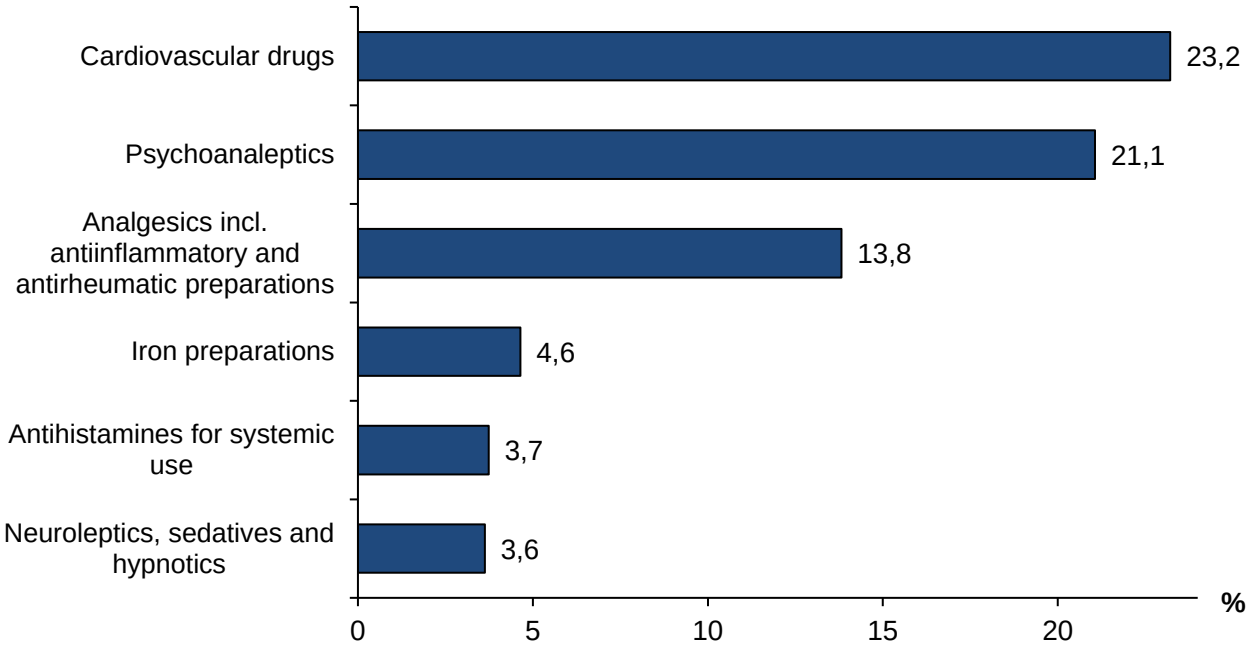
7 221 inquiries related to pharmaceuticals and children were received in 2024. In addition, there were 1 186 inquiries about herbal preparations and food supplements, mainly vitamins (not included in the above list).

The risk of poisoning was considered minor in 88% of the incidents with pharmaceuticals among children. In 12% 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.

Cardiovascular drugs was the most frequently-occurring class of drugs among children referred to hospital in 2024. However, one third of these cases concerned guanfacine, a medication classified as a cardiovascular drug but mainly used for ADHD. Medications for ADHD such as lisdexamfetamine and methylphenidate also constitute a large portion of the psychoanaleptic drugs, together with antidepressants such as sertraline and venlafaxine.

Figure 8. Most common pharmaceuticals leading to medical care (%) among children < 10 years (n=883)



3.1.1.3. Plants, children <10 years

Child poisoning cases involving plants are usually harmless. In 4% of the 2 766 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.

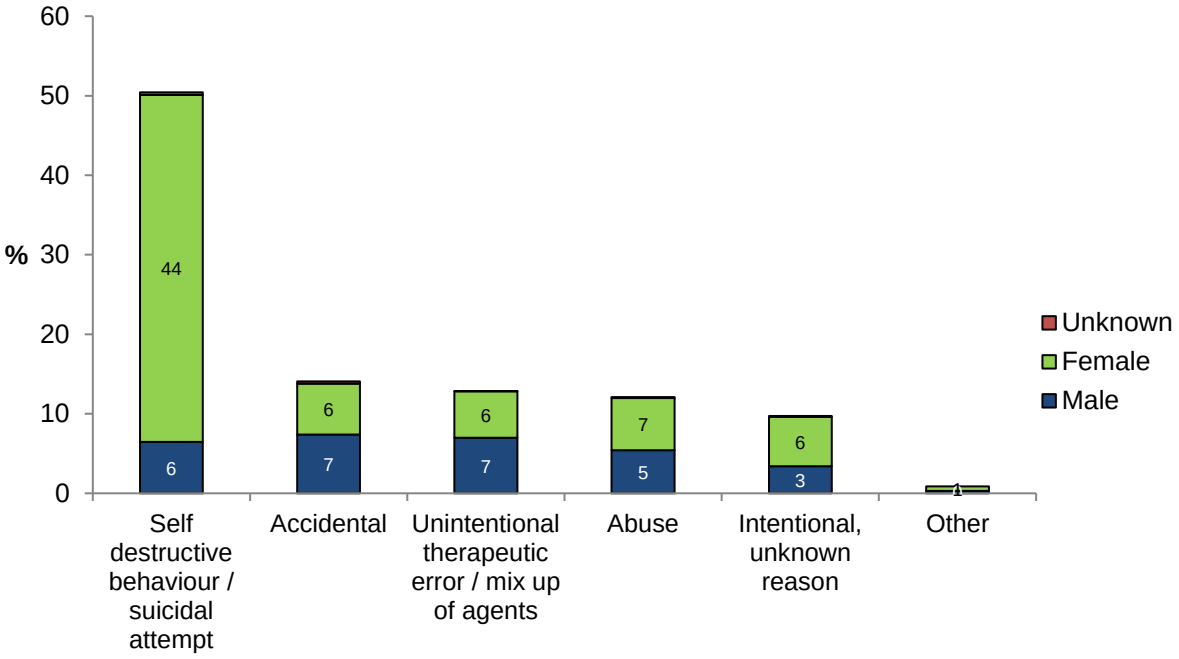
The most common inquiries with poisonous plants involved lily of the valley, laburnum flower, yew, and foxglove. Other cases that caused symptoms, although not poisonings, were cases where children had ingested plants with irritating sap (e.g., *Zamioculcas*) or had got irritating sap in their eyes.

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 13 962. Of these inquiries, 50% related to attempted suicide or self-harm, in most cases with pharmaceuticals and with a large female predominance (87%). In additionally 10% of the cases the overdose was

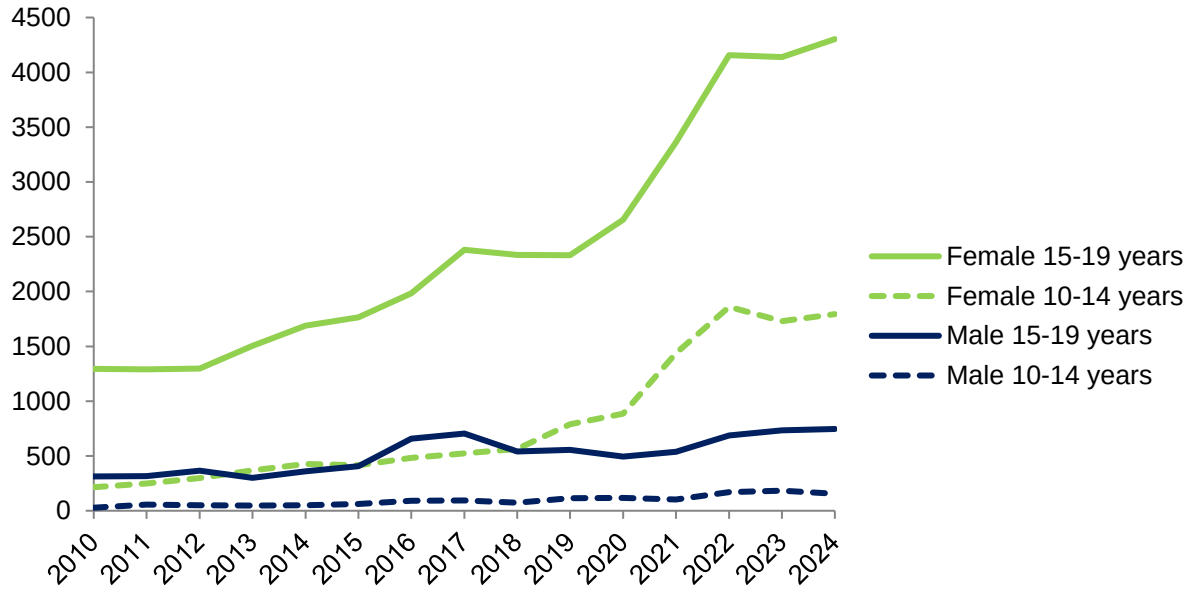
intentional, but with unclear purpose. 27% of the inquiries were due to accidents (including unintentional therapeutic errors) and 12% to abuse. Figure 9 shows the different reasons for poisoning.

Figure 9. Reason for poisoning, adolescents 10–19 years old (n=13 962)



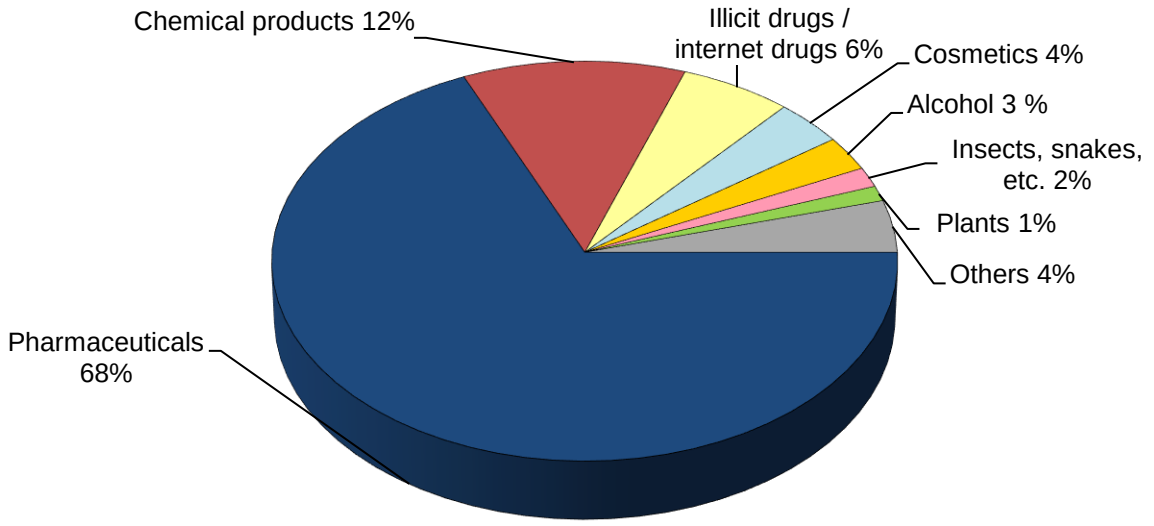
A large increase of inquiries concerning self-destructive poisonings in female adolescents is notable in recent years, also in younger girls (10–14 years). In 2023 however, there were slightly fewer inquiries compared to the previous year, but in 2024 they increased again. The number of calls about self-destructive poisonings in male adolescents is notably lower and did not increase in 2024. Figure 10 shows the annual number of these inquiries since 2010.

Figure 10. Inquiries 2010–2024, self-destructive behaviour and suicidal attempts, adolescents 10–19 years



In the adolescent group, poisoning with pharmaceuticals was most common and amounted to 68% of the inquiries. Chemicals/chemical products accounted for 12% of the calls and illicit drugs/internet drugs for 6% whereas other poisoning agents were less common (Figure 11).

Figure 11. Poisoning agent (%), adolescents 10–19 years old (n=13 962)



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: 32%, e.g., paracetamol (20%), ibuprofen (6%), pregabalin, tramadol.
- Psychoanaleptics, including ADHD pharmaceuticals and antidepressants: 28%, e.g., sertraline (7%), methylphenidate (6%), lisdexamfetamine (6%), fluoxetine.
- Neuroleptics, sedatives, hypnotics: 12%, e.g., propiomazine, melatonin, quetiapine, hydroxyzine.
- Antihistamines for systemic use: 12%, e.g., promethazine (8%), alimemazine.
- Cardiovascular drugs: 5%, e.g. guanfacine (3%), although mainly used for ADHD

There were 9 551 inquiries about adolescents who had overdosed pharmaceuticals in 2024. This was 4% more than the year before but corresponds to a 55% increase since 2020. A large majority (81%) was deliberate overdoses. 74% were recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. For the remaining 26% 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 841, a slight increase compared to 2023. Of those, 90% were recommended to seek medical care or advice was given directly to healthcare personnel treating the patient. Ecstasy and different forms of cannabis or cannabinoid products were most commonly involved.

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).

- Gases: 24%, e.g., nitrous oxide (14%), propane/butane (3%), exhaust gases, fire gases.
- Cleaning products: 15%, e.g., all-purpose cleaners, bleach containing hypochlorite, pool chemicals.
- Disinfectants: 11%, e.g., products containing ethanol/isopropanol.
- Household products: 8%, e.g., table salt (4%), acetic acid.
- Fuel: 6%, e.g., petrol/gasoline.
- Car products: 5%, e.g., antifreeze.

The risk of poisoning was considered minor in 48% of the 1 677 inquiries and could be addressed at the site of the incident. The remaining 52% of inquiries resulted in a recommendation to seek medical care, or advice was given directly to healthcare personnel treating the patient.

Of the calls concerning chemical products that lead to medical attendance, more than 25% concerned nitrous oxide. Inquiries about nitrous oxide (laughing gas) consumed by adolescents more than doubled in 2024. Other common products were cleaning agents and disinfectants with ethanol/isopropanol.

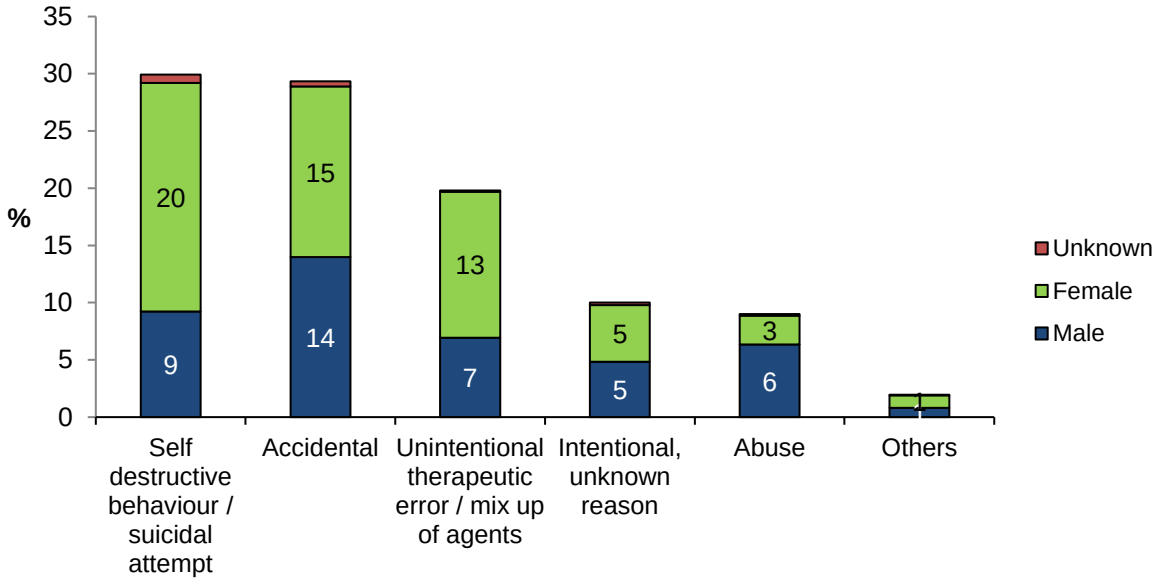
A majority of the incidents with chemicals was accidental. 39% of the accidental cases were by ingestion, 28% were eye exposure and 21% inhalation. 42% of the cases were intentional. Ingestion was common among intentional exposures (53%), but also inhalation (43%), mostly due to the large number of nitrous oxide exposures.

Inquiries about cosmetics and products for personal care (518 inquiries among adolescents) most commonly involved products for hair, nail or skin care. In 2024, 18% of the 518 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 63 630 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= 63 630)

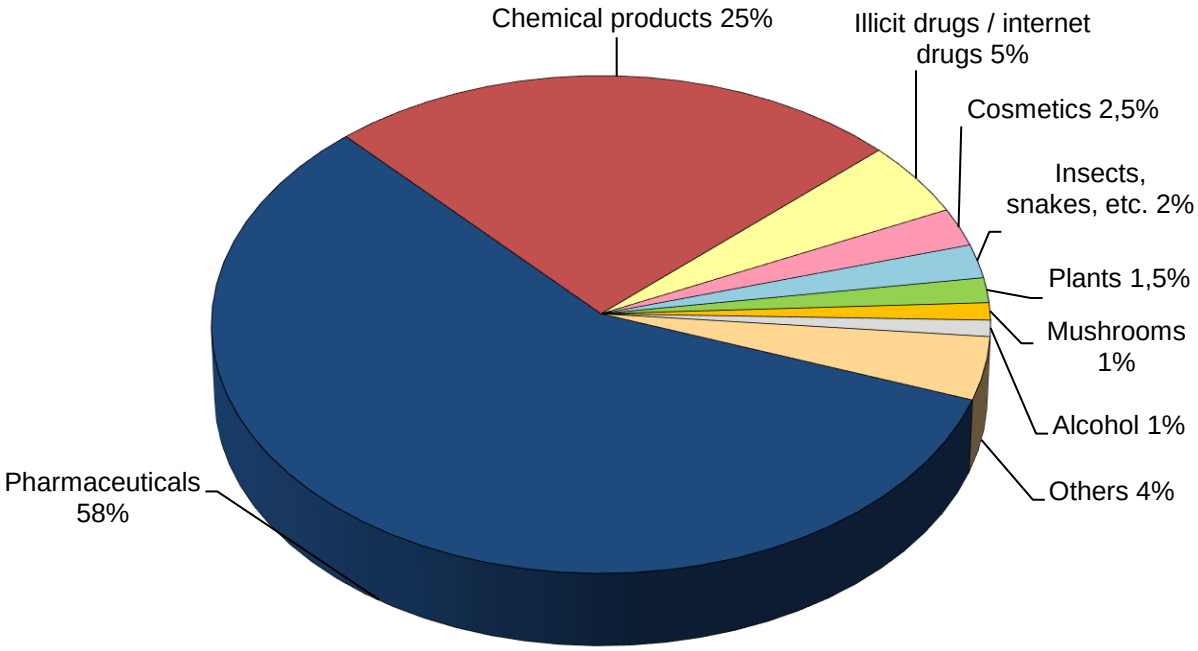


29% of the inquiries concerned various types of accidental exposures, including workplace accidents and incidents during do-it-yourself activities, and 20% concerned therapeutic errors/mix up of agents. In this group, unintentional overdosing of pharmaceuticals at home dominated (mostly double dose), which rarely results in poisoning.

In total, there was a 5% increase in inquiries about adults during the year. The largest increases were among inquiries about abuse or recreational use (+22%), self-destructive poisonings (+8%) and therapeutic errors (+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= 63 630)



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: 24%, e.g., paracetamol (11%), ibuprofen (3%), oxycodone, pregabalin, tramadol.
- Neuroleptics, sedatives, hypnotics: 21%, e.g., zopiclone (4%), propiomazine (3%), quetiapine (3%), alprazolam, lithium.
- Psychoanaleptics, including antidepressants, ADHD pharmaceuticals: 14%, e.g., sertraline (3%), bupropion, lisdexamfetamine, venlafaxine.
- Cardiovascular drugs: 10%, e.g., metoprolol, amlodipine.
- Antihistamines for systemic use: 8%, e.g., promethazine (5%), alimemazine (3%).
- Antiepileptics: 3%, e.g., lamotrigine.

Among the 36 659 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 (of which 90% were intentional) 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 3 083, a 6% increase on 2023. Out of these, 90% were recommended to seek medical care or advice was given directly to medical personnel treating the patient. In 56% of the cases, the drugs involved were well-known substances such as amphetamine, cocaine, ecstasy and LSD. Inquiries about newer “designer drugs” or not controlled substances amounted to 22% of the cases. Most common among these were cannabinoids, 3-CMC, muscimol and kratom.

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: 24%, e.g., cleaning/bleaching agents with hypochlorite, washing-up liquid, dishwasher detergents, drain cleaners with NaOH, descaling agents with acid.
- Gases: 19%, e.g., nitrous oxide (6%), fire gases, carbon monoxide/exhaust fumes.
- Disinfectants: 9%, e.g., products containing ethanol/isopropanol.
- Car products: 7%, e.g., antifreeze/brake fluids, lubricants.
- Industrial chemicals: 7%, e.g., acids, sodium hydroxide, ammonia.
- Household products: 5%, e.g., household acetic acid.
- Fuel: 4%, e.g., petrol/gasoline, fire-lighting fluid/lamp oil.

The risk of poisoning was considered relatively low in 60% of the 15 898 inquiries about adult exposures and care at the incident site was sufficient. For the remaining 40% 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 (35%). Also ingestion (30%) and eye contact (21%) were common.

Intentional poisoning accounted for 18% of the inquiries. Nitrous oxide (laughing gas) accounted for 31% of all cases of deliberate exposure to chemicals. Inquiries about recreational use of nitrous oxide continued to increase in 2024, even more so than the year before. Many of the inquiries were from hospitals calling about patients with symptoms of neurotoxicity following long-term use of nitrous oxide. Disinfectants containing ethanol were implicated in another 22% of of deliberate poisoning with chemicals. These products had in many cases been consumed as a substitute for alcohol.

Inquiries about cosmetics/products for personal care (1 574 calls in total) mostly involved skin care products, hair products (e.g., colouring agents) and nail 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. Assignments and collaborations

4.1. 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.

4.2. Publications

Publications in scientific journals and abstracts from international confrenses:

4.6.1 Publications in scientific journals

1. Norberg E, Knudsen K, Blomgren A, Stevens M, Lindeman E, Nordmark Grass J. Circulatory failure after bupropion overdose/Allt fler allvarliga förgiftningar med preparatet bupropion. Läkartidningen 2024 Mars 26:121: 23119. Article in Swedish.

2. McMahon G, Lönnberg F, Gautam G, Ågren A, Nordmark Grass J, Siddiqui A J. Life-threatening thrombosis after large amounts of nitrous oxide. JACC Case Rep. 2024 Mar 21;29(9):1032312

3. Kader A, Hermanns-Clausen M, Van Riel A, Faber K, Hondebrink L. Advancing toxicovigilance of recreational drugs including new psychoactive substances, by using data from four European poison centres. Clinical Toxicology 2025, vol 63, 23-31

4.6.2 Abstracts

1. Lindeman E, Demirel P. Poison Centres should organize hunts for PMMA or PMMA-like novel psychoactive substances. Poster at the 44th. International Congress of EAPCCT. Munich, Germany. Clin Toxicol 2024; 62

2. Westerberg J, Bång Arhammar J. Severe lactic acidosis after intake of apricot kernels Poster at the 44th. International Congress of EAPCCT. Munich, Germany. Clin Toxicol 2024; 62

3. Nilsson U, Phan H, Nordmark Grass J. Never ending story – an extraordinary long duration of diazepam intoxication. Poster at the 44th. International Congress of EAPCCT. Munich, Germany. Clin Toxicol 2024; 62

4. Arvidsson S, Arvidsson J, Lindeman E. Get another hobby. The cost of antivenom and antivenom logistics in a Crotalus Atrox bite in Sweden. Poster at the 44th. International Congress of EAPCCT. Munich, Germany. Clin Toxicol 2024; 62

5. Nordmark Grass J. Fun I love but too much fun is of all things the most loathsome. Oral presentation at the 44th. International Congress of EAPCCT. Munich, Germany. Clin Toxicol 2024; 62

6. Bång Arhammar J, Westerberg J, Nordmark Grass J. Frostbite injuries – a common and potential life-threatening side effect of recreational nitrous oxide use. Poster at the 44th. International Congress of EAPCCT. Munich, Germany. Clin Toxicol 2024; 62

7. Nordmark Grass J, Blomgren A, Lindeman E. Better three hours too soon than one minute too late. The evacuation of ghost pills in a case of hemodynamic collapse after bupropion overdose. Oral

presentation at the 44th. International Congress of EAPCCT. Munich, Germany. Clin Toxicol 2024;

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