



GIFTINFORMATIONSCENTRALEN
SWEDISH POISONS INFORMATION CENTRE



Swedish Poisons Information Centre Annual Report 2020

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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.

Summary

- During 2020 the telephone service answered 96 393 telephone calls, an increase of 1.6% compared to 2019.
- The number of calls from the healthcare system continued to increase during 2020. 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.
- Paracetamol (acetaminophen) is still by far the most common drug intoxicant. The number of inquiries regarding intentional overdoses with paracetamol continued to increase in 2020. However, accidental overdoses in children with paracetamol, along with cough medications, decreased significantly. This is probably a paradoxical consequence of the COVID-19 pandemic because the restrictions and sanitary measures are known to have reduced the incidence of many other infections and hence consumption of these medications.
- During 2020, the Swedish Poisons Information Centre published 4 scientific articles and 7 abstracts.
- The Poisons Centre has provided about 30 seminars and lectures in 2020, mostly to physicians and other healthcare workers. The number of activities was greatly reduced compared to previous years due to the pandemic.
- New software for receiving information about chemical products has been developed in 2020. This will be used for the submission of the requested information in the EU regulation (EC) 1272/2008 (CLP) article 45 on the composition of chemical products.
- 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.

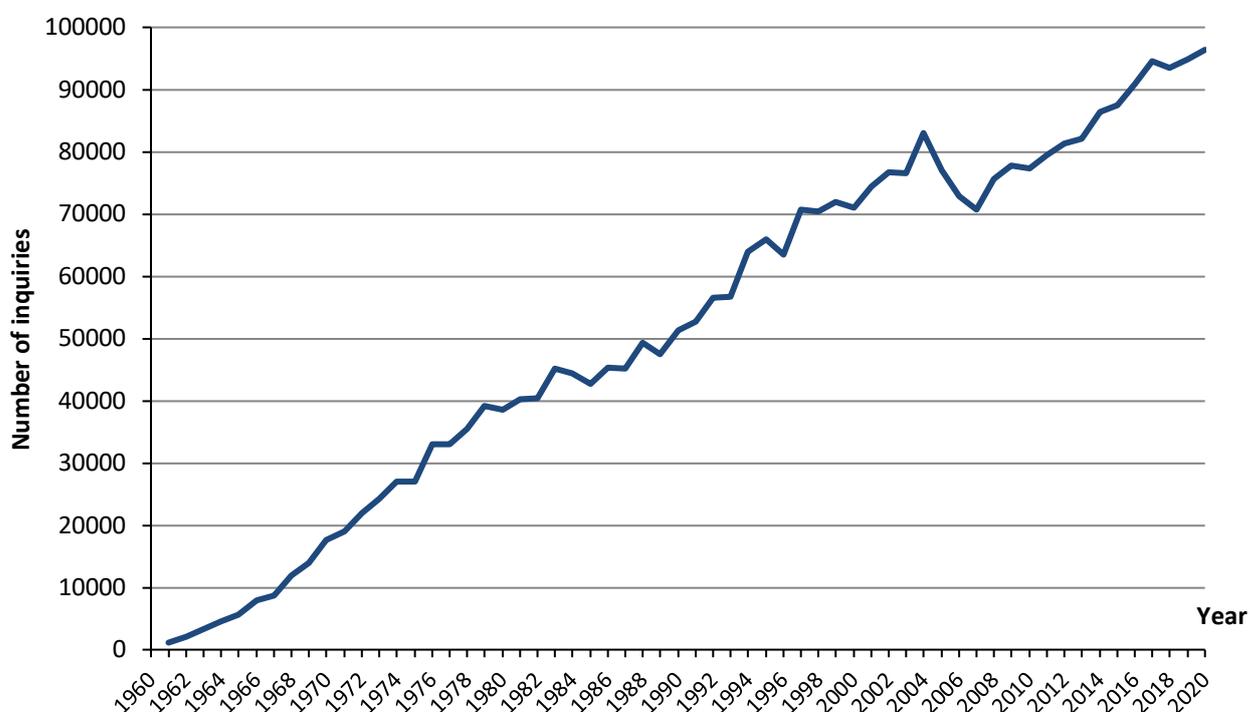
Telephone Service

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 2020 are illustrated in Figure 1.

Figure 1. Number of calls to Swedish Poisons Information Centre 1961–2020



The total number of calls in 2020 was 96 393. One third of the inquiries (31 914) were from the healthcare services. Of these, 74% were from hospitals, 20% from national emergency number operators or paramedics and 6% 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.

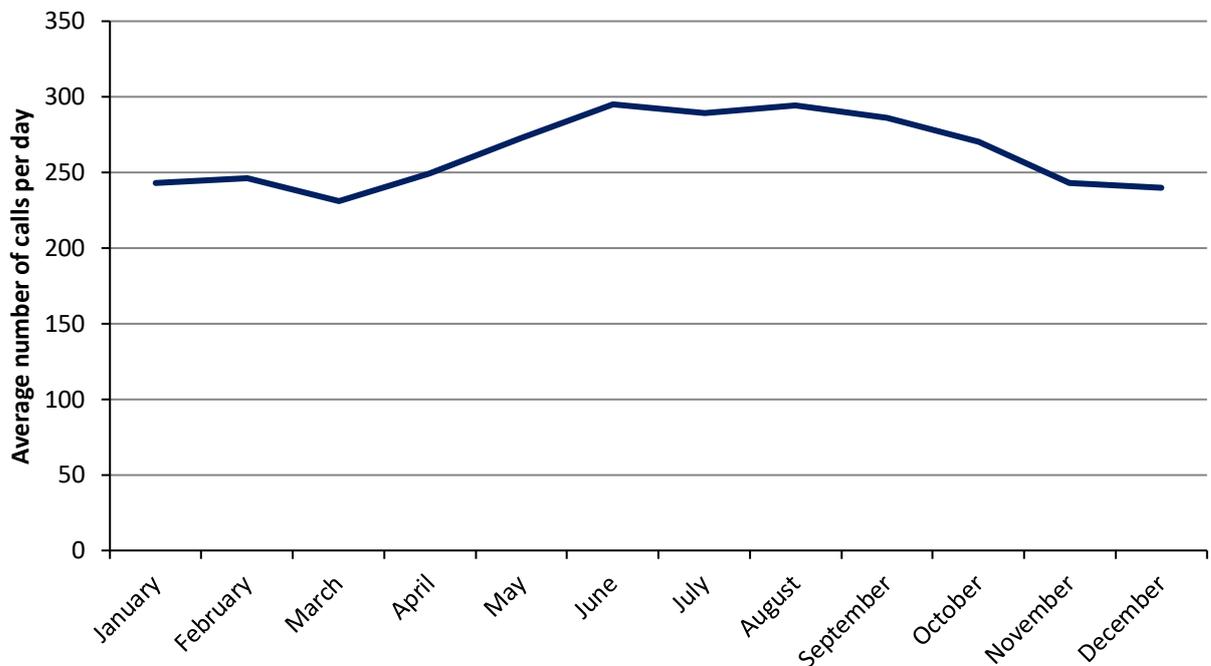
The average number of calls per 24-hour period was 263, with the main peak of incoming calls between 4 and 8 p.m., and a smaller peak around 10 a.m. The 24-hour variation in number of calls is shown in Figure 2.

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, wasps and snakes to a higher extent. In 2020, the average number of calls per 24-hour period during May to September was 288. In accordance with the trend of the latest years, there was a high number of inquiries about viper bites in 2020 (1 077 in total). The number of inquiries about mushrooms were around average (1 332 in total).

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



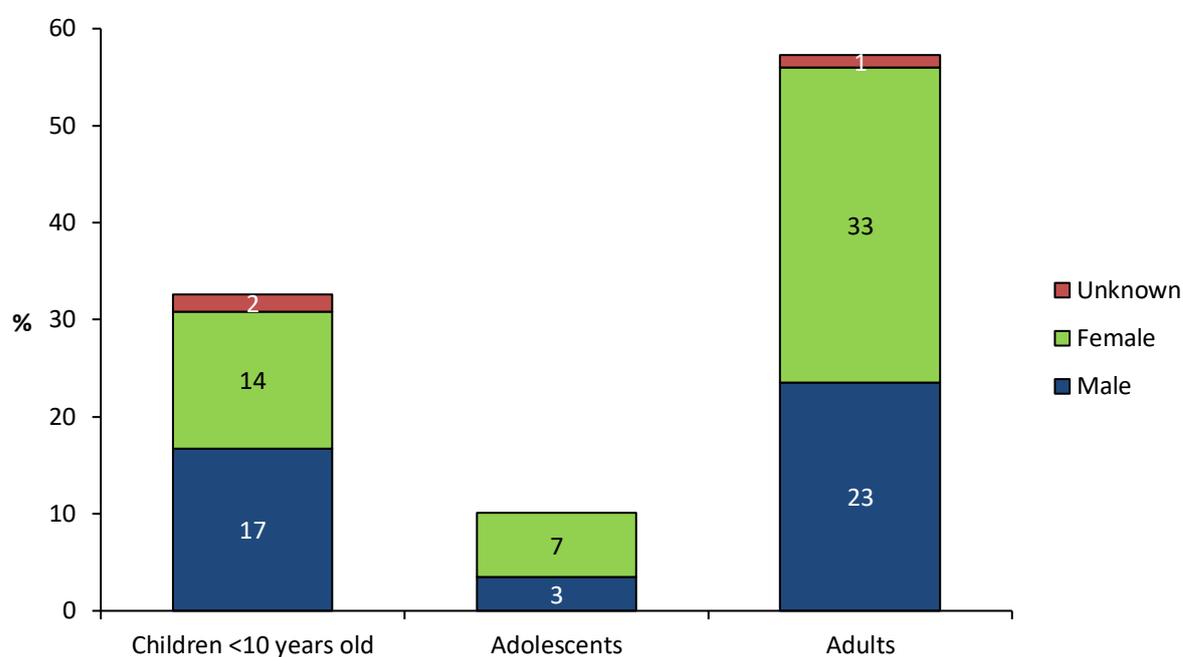
Of the 96 393 calls the Centre received during 2020, 88 643 concerned human poisonings/incidents. The remainder was requests for general information (6 814 calls) or concerned animals (936 calls).

Human Poisonings/Exposures

A majority of the 88 643 calls concerning human poisonings/exposures came from general public (62%), 35% 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.

57% of the inquiries concerned adults, 10% adolescents (10–19 years) and 33% children below 10 years. The distribution is illustrated in Figure 4.

Figure 4. Incidents, age/gender (%)

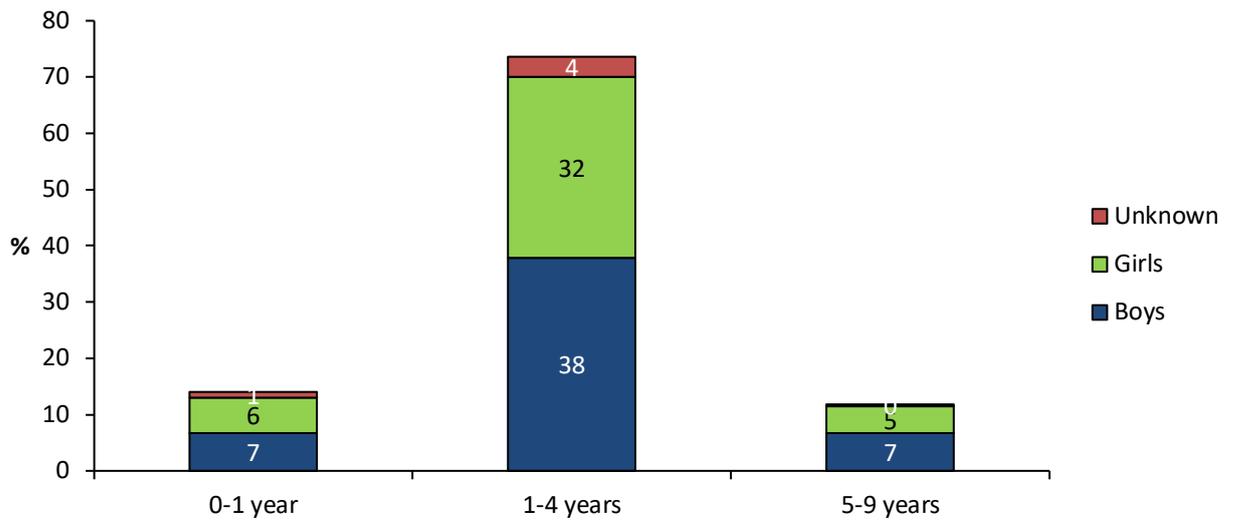


(n=88 643)

Poisonings/exposures in children <10 years

The Poisons Centre received 28 867 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 (87% of cases).

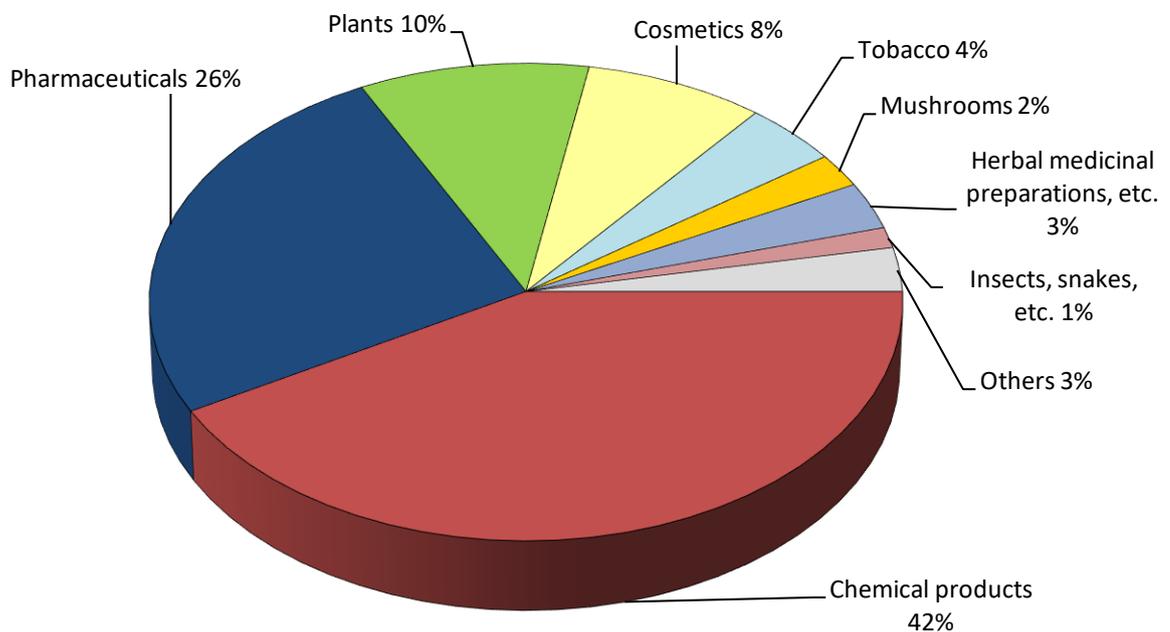
Figure 5. Incidents, age/gender (%), children <10 years



(n=28 867)

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 10%. The remainder included tobacco, mushrooms, insects and snakes (Figure 6).

Figure 6. Poisoning agent (%), children <10 years



(n=28 867)

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:** 38%, e.g. dishwasher detergents (11%), toilet bowl cleaners, washing-up liquids, all-purpose cleaners, and laundry powder (3–5% each).
- **Disinfectants:** 10%, e.g. products containing ethanol/isopropanol.
- **Household products:** 6%, e.g. acetic acid, table salt.
- **Pesticides:** 4%, e.g. insecticides, rodenticides.
- **Paints:** 4%, e.g. interior paints, kids' paints.
- **Batteries:** 3%, e.g. button (disc) batteries, cylindrical batteries.

The number of paediatric poisoning incidents involving chemical products was 12 073, a 10% increase compared to 2019. More than half of the increase could be attributed to the large number of inquiries about disinfectants, mainly ethanol-containing products. However, a large majority of these incidents (93%) was considered harmless. In total, 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.

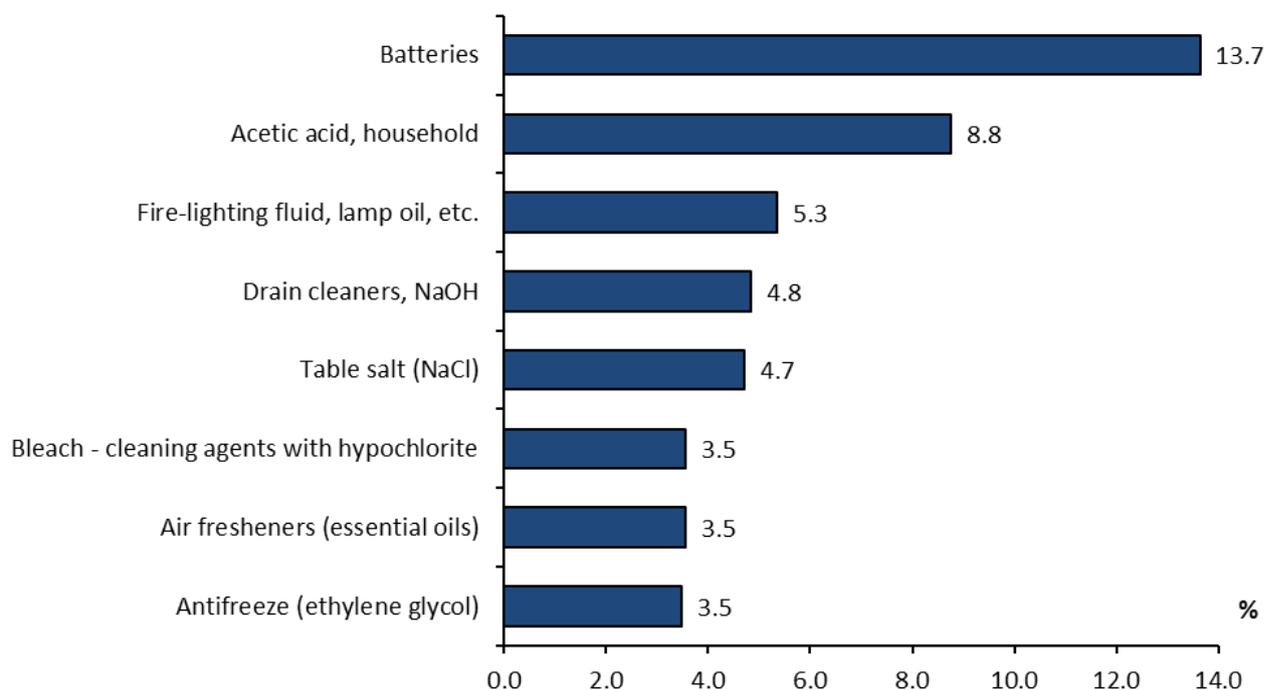
In 36% of the calls that led to a recommendation to seek medical care, the child had ingested a corrosive product, e.g. 24% household acetic acid, drain cleaners, bleaching/cleaning agents with hypochlorite, and descaling products.

In 2020, there was a 30% increase of inquiries about incidents among children with acetic acid. This could be attributed to the raising popularity of using acetic acid for cleaning and other purposes. Another popular trend that also causes poisoning incidents is using air fresheners containing essential oils. 40% of the inquiries about acetic acid among children and 30% about essential oils, respectively, 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 yearly in the beginning of the 2000s to 103 in 2020.

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 or cosmetic leading to medical care (% of total number of chemical products leading to medical care) among children <10 years



(n=1 552)

Among **cosmetics and products for personal care** (2 328 inquiries in total), the most commonly-reported were skin lotions, nail care products containing acetone/acetate, dental care products with fluoride and liquid soap/shampoo. 91% of these incidents were considered harmless. Among the cases requiring medical care, wart-removing agents were the most commonly-involved type of product.

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 (12%), ibuprofen (5%), diclofenac.
- **Vitamins:** 8%, e.g. vitamin D.
- **Psychoanaleptics including ADHD pharmaceuticals, antidepressants:** 8%, e.g. sertraline, methylphenidate, lisdexamfetamine.
- **Dermatological preparations:** 6%, e.g. hydrocortisone.
- **Antihistamines for systemic use:** 6%, e.g. desloratadine.
- **Cardiovascular drugs:** 5%, e.g. beta blockers.

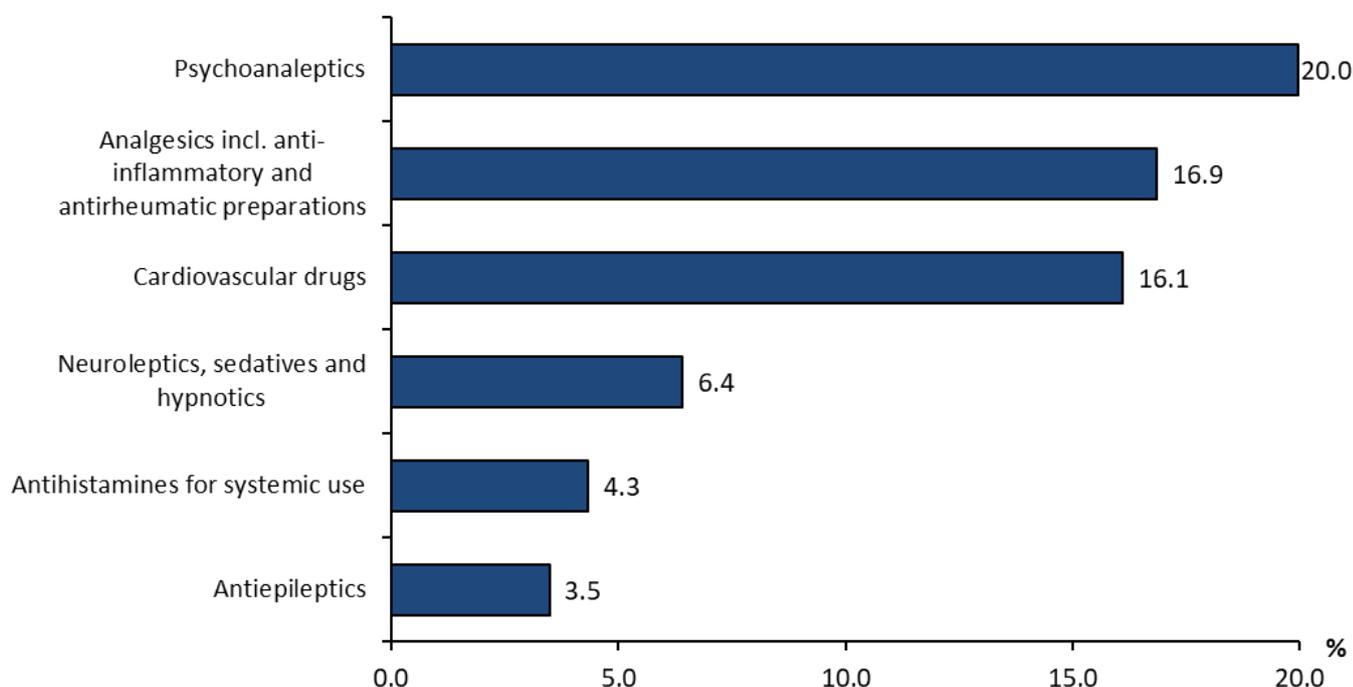
7 411 inquiries related to pharmaceuticals and children were received in 2020, an 8% decrease compared to 2019. In particular, inquiries involving cough preparations and paracetamol were significantly fewer (down 38 and 24%, respectively).

The risk of poisoning was considered minor in 86% of the incidents with pharmaceuticals among children. Common incidents, usually harmless, involve vitamins, birth control pills, and cortisone preparations. This is true also for natural remedies (which are not included in the above list).

In 14% 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-malaria drugs, do not appear in this figure, as the total number of poisoning cases with these pharmaceuticals was low.

Psychoanaleptics were the most frequently-occurring class of drugs in 2020 among children referred to hospital. Among these are antidepressants such as venlafaxine and sertraline and ADHD medications such as methylphenidate and lisdexamfetamine. Additionally, ingestion 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 (%), children < 10 years.



(n=1 062)

Plants, children <10 years

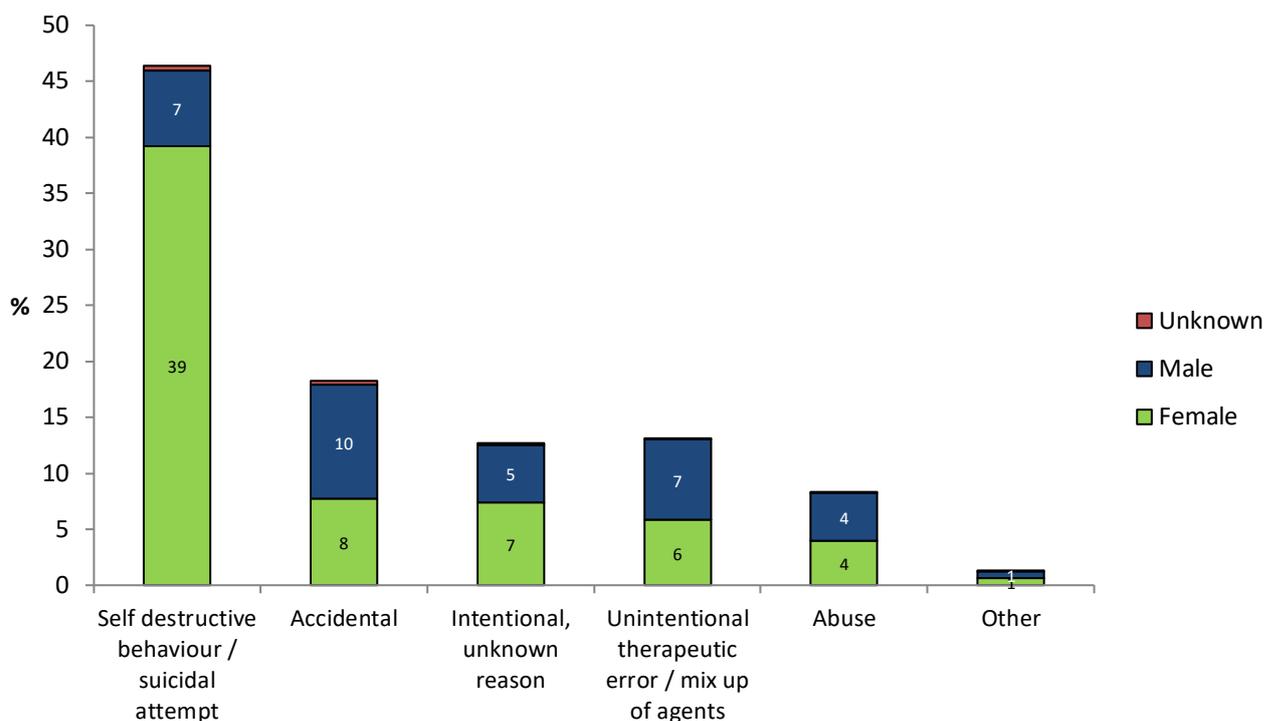
Child poisoning cases involving plants are usually harmless. In less than 4% of the 2 977 inquiries the caller was recommended to seek medical care or advice was given directly to healthcare personnel treating the patient.

The most common inquiries with poisonous plants involved lily of the valley, laburnum flower, yew, monkshood, mezezeon 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.

Poisonings/exposures in adolescents 10–19 years old

The total number of inquiries to the poisons centre concerning adolescents 10–19 years was 9 026. Of these inquiries almost half related to attempted suicide or self-harm, in most cases with pharmaceuticals and with a large female predominance. In additionally 10% of the cases the overdose was intentional, but with unclear purpose. A fifth of the incidents were due to accidents and 8% to abuse. Figure 9 shows the different reasons for poisoning.

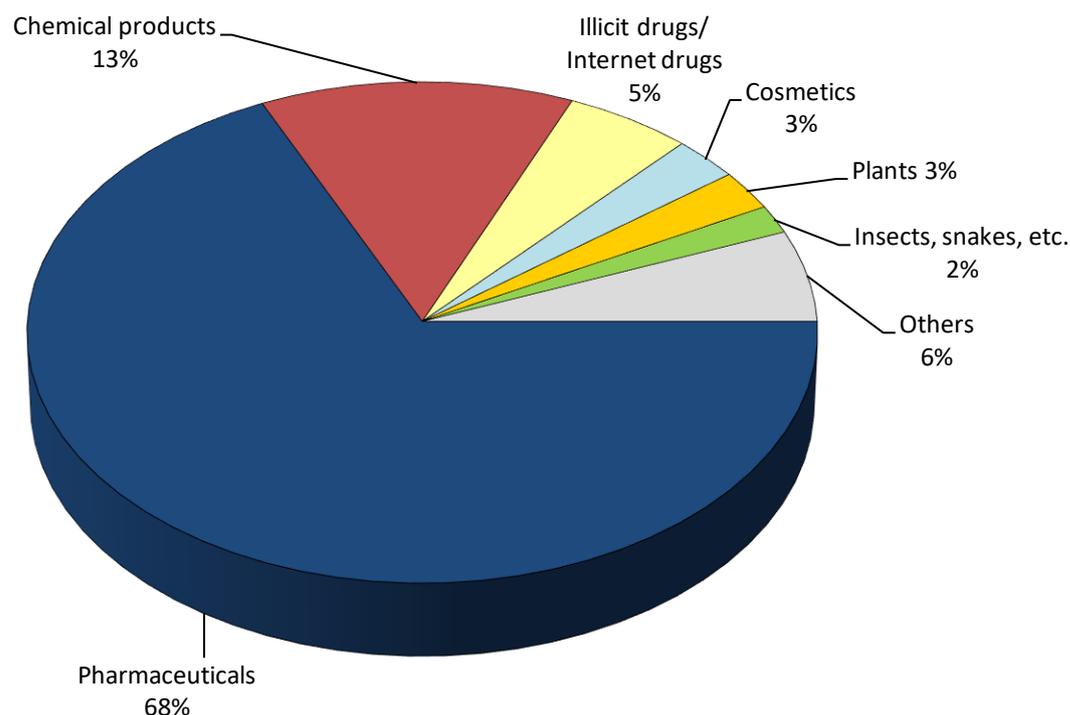
Figure 9. Reason for poisoning, adolescents 10–19 years old



(n=9 026)

In the adolescent group, poisoning with pharmaceuticals was most common and amounted to 68% of the inquiries. Chemicals/chemical products accounted for 13% of the calls, while other poisoning agents were used less commonly (Figure 10).

Figure 10. Poisoning agent (%), adolescents 10–19 years old



(n=9 026)

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:** 29%, e.g. paracetamol (19%), ibuprofen (5%), tramadol.
- **Psychoanaleptics, including ADHD pharmaceuticals and antidepressants:** 26%, e.g. sertraline (6%), lisdexamfetamine (5%), methylphenidate (5%), fluoxetine.
- **Neuroleptics, sedatives, hypnotics:** 16%, e.g. melatonin, propiomazine, hydroxyzine.
- **Antihistamines for systemic use:** 11%, e.g. promethazine (7%), alimemazine.

Of the 6 144 inquiries in this group, 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 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 489. Of those, 88% were recommended to seek medical care or advice was given directly to healthcare personnel treating the patient.

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:** 22%, e.g. bleach containing hypochlorite, drain cleaners, pool chemicals, washing-up liquids.

- **Disinfectants:** 15%, e.g. products containing ethanol/isopropanol (12%).
- **Gases** 11%, e.g. propane/butane, fire gases.
- **Fuel:** 9%, e.g. petrol/gasoline (6%).

The risk of poisoning was considered minor in 61% of the 1 209 inquiries and could be cared for at the site of the incident. The remaining 39% were recommended 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 corrosive products (e.g. cleaning/bleaching agents with hypochlorite, 24% acetic acid or drain cleaners), gases (e.g. propane/butane, carbon monoxide, fire gases), disinfectants with ethanol/isopropanol and petrol/gasoline (which can cause pneumonia if aspirated and also constitutes a risk if inhaled)

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 (73%) but inhalation was also relatively common (19%).

Inquiries about **cosmetics/products for personal care** (254 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.

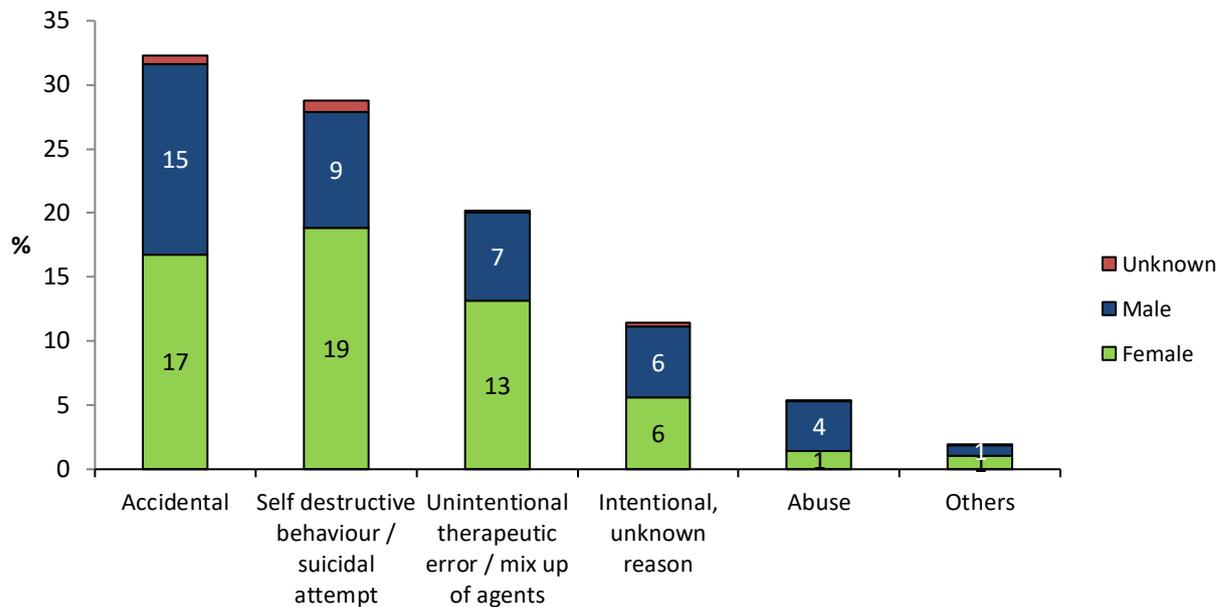
Poisonings/exposures in adults

Among adults, various types of accidental exposures, including workplace accidents and incidents during do-it-yourself activities, caused close to one third of the 50 750 inquiries (Figure 11). However, 46% concerned intentional incidents, including suicide attempts and abuse, mainly with pharmaceuticals or illicit drugs/internet drugs. A large majority of the serious poisonings belong 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 was largely similar in 2020 compared to 2019. However, inquiries regarding occupational exposures fell by 18%, a decrease probably related to the pandemic. Inquiries about self-destructive poisonings increased somewhat but not as much as in preceding years.

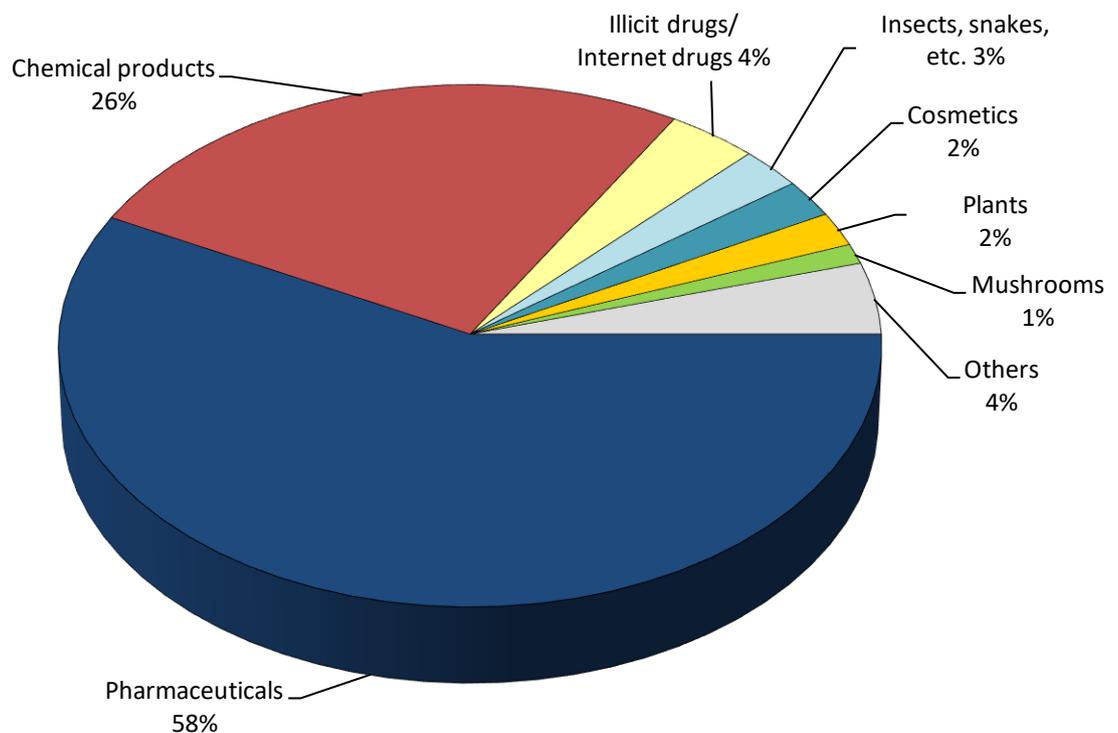
Figure 11. Reason for poisoning (%), adults



(n=50 750)

Over half (58%) of all adult poisoning inquiries were related to pharmaceuticals. Inquiries about chemicals/chemicals products constituted 26%, illicit drugs/internet drugs 4%, whereas plants, cosmetics, insects, snakes and mushrooms constituted a minority of all incidents (Figure 12).

Figure 12. Poisoning agent (%), adults



(n=50 750)

Pharmaceuticals, adults

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

- **Neuroleptics, sedatives, hypnotics:** 22%, e.g. zopiclone (4%), propiomazine (3%), quetiapine, oxazepam.
- **Analgesics, including anti-inflammatory and anti-rheumatic pharmaceuticals:** 21%, e.g. paracetamol (11%), ibuprofen (3%), oxycodone, tramadol.
- **Psychoanaleptics, including antidepressants, ADHD pharmaceuticals:** 13%, e.g. sertraline, venlafaxine, methylphenidate.
- **Antihistamines for systemic use:** 7%, e.g. promethazine (4%), alimemazine.
- **Antiepileptics:** 5%, e.g. pregabalin, lamotrigine.

Among the 29 200 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 1 887. Out of these, 88% 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 and ecstasy. Only a small part of the inquiries concerned new designer drugs, i.e. the opposite situation compared to around five years ago.

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:** 27%, e.g. washing-up liquid, cleaning/bleaching agents with hypochlorite, drain cleaners with NaOH, descaling agents with acid.
- **Disinfectants:** 13%, e.g. products containing ethanol/isopropanol.
- **Gases:** 12%, e.g. fire gases, carbon monoxide/exhaust fumes.
- **Car products:** 7%, e.g. antifreeze/brake fluids, lubricants.
- **Industrial chemicals:** 6%, e.g. acids, sodium hydroxide, ammonia.
- **Fuel:** 5%, e.g. petrol/gasoline, fire-lighting fluid/lamp oil.

The risk of poisoning was considered relatively low in 67% of the 13 236 inquiries about adult exposures and care at the incident site was sufficient. For the remaining 33% 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, irritant gases), corrosive products (cleaning/bleaching agents with hypochlorite, drain cleaners, alkaline cleaning agents, descaling agents) and anti-freeze agents containing ethylene glycol. 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 slightly above half of the inquiries related to chemicals, the route of exposure was through inhalation or eye contact. Ingestion of a chemical product by mistake was also relatively common. Intentional poisoning accounted for 12% of the inquiries.

Inquiries about **cosmetics/products for personal care** (1 182 calls in total) mostly involved skin care products, hair colouring agents, nail care products and preparations for treating warts. 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.

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 2020, a total of 936 calls concerning animals were referred.

Assignments and collaborations

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.

Publications

1. Linda Myllymäki, Jenny Westerbergh, Håkan Carlsson, Jonas Höjer. Livsfarligt missbruk av receptfria diarréläkemedlet loperamid. [Torsade de pointes following repeated massive loperamide ingestions] *Läkartidningen* 2020; 117: 154-155
2. Erik Lindeman, Jonas Ålebring, Anna Johansson, Johan Ahlner, Fredrik C Kugelbergh, Johanna Nordmark Grass. The Unknown Known. Non-cardiogenic pulmonary edema in amlodipine poisoning - a cohort study. *Clinical Toxicology* 2020 Nov 58(11):1042-49.
3. Helander A, Villen T, Hansson T, Nordmark Grass J. Förenklad analys av etylenglykol kan ge snabbare diagnos vid förgiftningsfall. [Simplified laboratory analysis of ethylene glycol allows improved management of poisoning cases] *Läkartidningen* 2020; 117:FZWM
4. Vardavas CI, Girvalaki C, Odani S, Grass JN, Nikitara K, de Vries I, van Riel A, van Sommerende Potter I, Grassi MC, Deim S, Balázs A, Fosztó S, Schiel H, Arif T, Eronen AK, Alonso AA, Menor JLC, Arrieta RM, Babić Ž, Turk R, Vardavas AI, Tsatsakis A. Profile of incidental exposures to e-cigarette liquids in Europe, 2018-2019. *Hum Exp Toxicol.* 2020 Dec 4

Published abstracts

1. Larsson S. Risky dietary supplements – self-harm with potassium salt capsules. Poster at the XXXX Congress of EAPCCT, Tallinn. *Clin Toxicol* 2020;58:6

2. Lindeman E, Gunnervik M. Crisis averted? Olanzapine as an antidote for serotonin toxicity: a case report. Poster at the XXXX Congress of EAPCCT, Tallinn. Clin Toxicol 2020;58:6
3. Nordmark Grass J, Wieslander M. Severe acidosis and prolonged unconsciousness in a massive overdose of γ -hydroxybutyrate (GHB). Poster at the XXXX Congress of EAPCCT, Tallinn. Clin Toxicol 2020;58:6
4. Lindeman E, Ålebring J. Non-cardiogenic pulmonary edema in amlodipine poisoning: the lesser evil? Poster at the XXXX Congress of EAPCCT, Tallinn. Clin Toxicol 2020;58:6
5. Nordmark Grass J, Nilsson U. Overrepresentation of flavoured, orodispersible tablets in paediatric paracetamol overdoses. Poster at the XXXX Congress of EAPCCT, Tallinn. Clin Toxicol 2020;58:6
6. Nordmark Grass J, Bååth L. Rectal overdose of paracetamol. Poster at the XXXX Congress of EAPCCT, Tallinn. Clin Toxicol 2020;58:6
7. Aza K, Myllymäki L. Torsade de pointes following repeated massive loperamide ingestions. Poster at the XXXX Congress of EAPCCT, Tallinn. Clin Toxicol 2020;58:6