



Swedish Poisons Information Centre Annual Report 2014



GIFTINFORMATIONSCENTRALEN
SWEDISH POISONS INFORMATION CENTRE

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Summary

The Swedish Poisons Information Centre (GIC) handled 86 397 telephone inquiries during 2014, which is an increase of 5 % compared to 2013, and the highest number since the centre was founded in the early sixties.

The proportion of calls concerning new psychoactive substances (Internet drugs) continues to increase. These cases are often complex and time consuming. For acute poisonings in general, 30% came from health care professionals, and for poisonings with pharmaceutical drugs this number was 43%. It is noteworthy that the number and proportion of calls coming from health care professionals increased despite all the easily accessible internet based databases containing toxicologic information.

An important task for GIC is to constantly scan available literature, review our treatment guidelines, and monitor poisoning trends.

Since 2010 the long term increasing trends of paracetamol poisonings has accelerated even faster. This signal led to a proposal from the Swedish MPA to limit sales of paracetamol tablets to pharmacies only. (It is currently available also in retail stores). A final decision in this matter is expected during 2015.

Our pharmacists are trained in identifying mushrooms and modern technology, using pictures sent in via SMS or e-mail, often enables fast determination of toxicity risk. Following a pilot project in 2013, GIC has now established collaboration with a mycologist, who is on call for consultation 24h/day throughout mushroom season. During 2014 this service was used in 64 especially difficult cases.

In November GIC launched a new website, both for physicians and for the general public, now modernized and adapted for mobile phones (www.giftinformation.se) .

A lot of time and effort during last year were invested in planning and preparing for a new telephone system and call guide installation. This is expected to be delivered during 2015.

GIC staff produced 12 scientific papers during the year, and delivered numerous lectures and courses throughout Sweden. 2014 also brought more contacts and inquiries from the media than previous years.

Members of our staff contributed through roles in a number of collaborative groups at the European level, and the exchange and cooperation with colleagues around Europe is extensive.

In conclusion, 2014 was a very productive year for GIC, and many projects and tasks could be undertaken in addition to the core phone inquiry service, despite the increase in number of calls.

Stockholm, March 2015

Maja Marklund
Unit Director

Mark Personne
Medical Director

Telephone Service

The main responsibility of GIC is to inform about risks, symptoms and treatment in cases of acute poisoning. The service is on a twenty-four hour basis and connected to the national alarm number 112. Inquiries are received from medical staff at hospitals or ambulances as well as from the general public. During office hours three pharmacists are at service answering calls, and additional pharmacists are available in case of queue situations. Evenings, nights and weekends, the staffing is reduced. One of the physicians is always on duty.

Telephone inquiries

During 2014 the centre received 86 397 calls, which is an increase of 5%. The development in number of calls from 1961 to 2014 is shown in Figure 1.

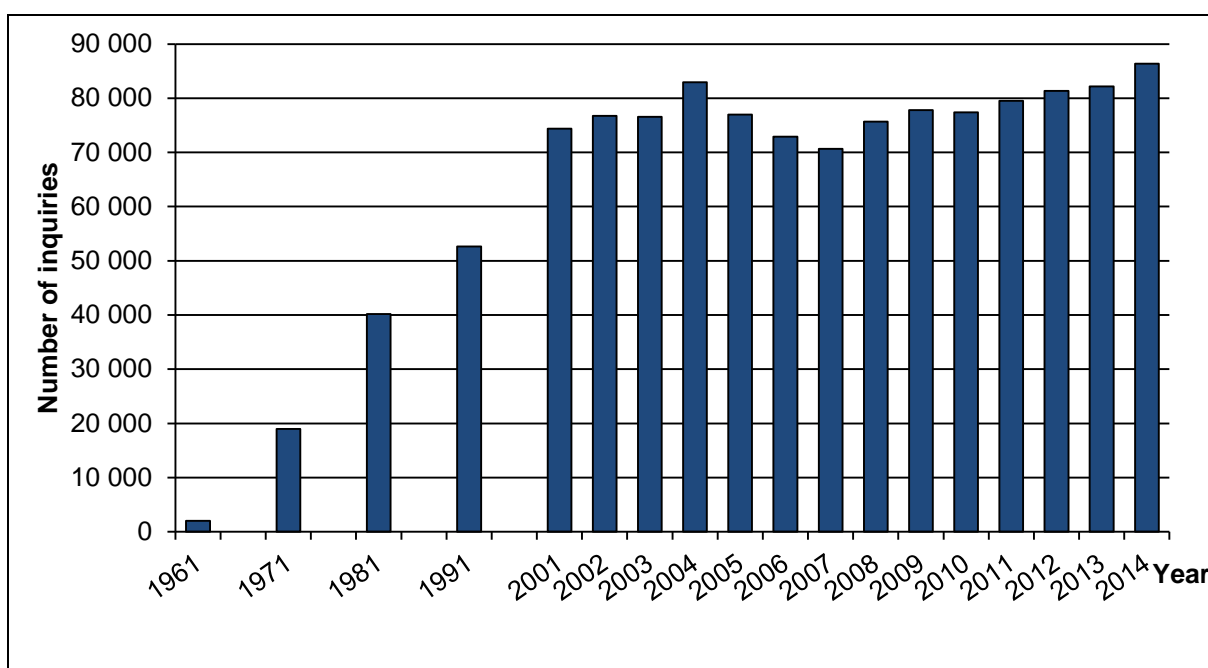


Figure 1. Development in total number of calls 1961-2014

The average number of calls per twenty-four hours was 237, with the main peak of incoming calls between 4 and 8 p.m., and a second peak around 10 a.m. Figure 2 shows the twenty-four hours variation in number of calls.

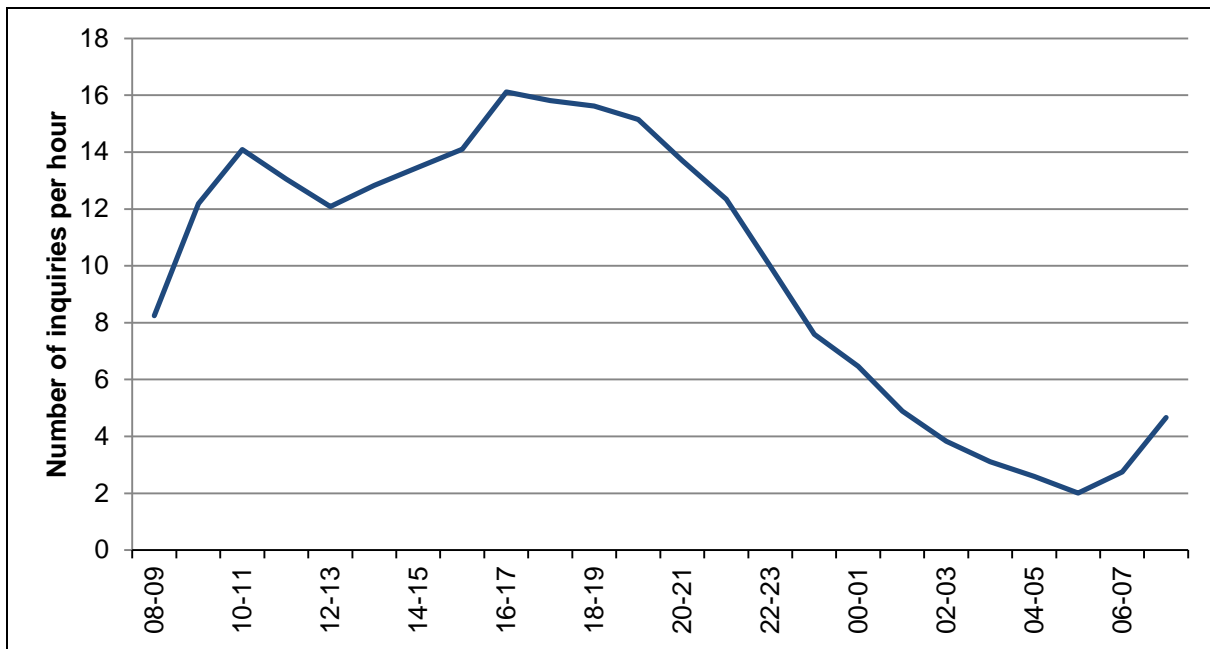


Figure 2. Number of calls received per twenty-four hours

Similar to previous years the most intense time for GIC 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. During May to September the average number of calls per twenty-four hours was 253.

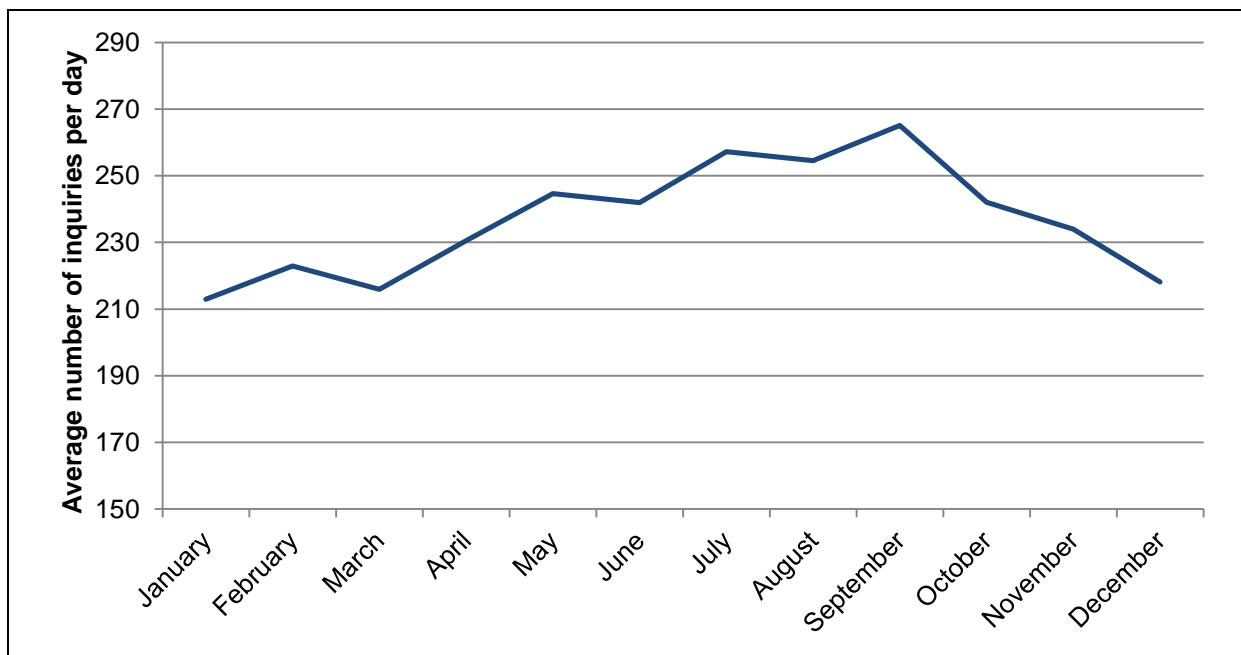


Figure 3. Monthly variation of calls

Of the total of 86 397 calls the centre received during 2014, 76 811 concerned humans and 2 394 animals. The remaining 7 192 calls were requests for general information, not connected to a specific case. This distribution is illustrated in figure 4.

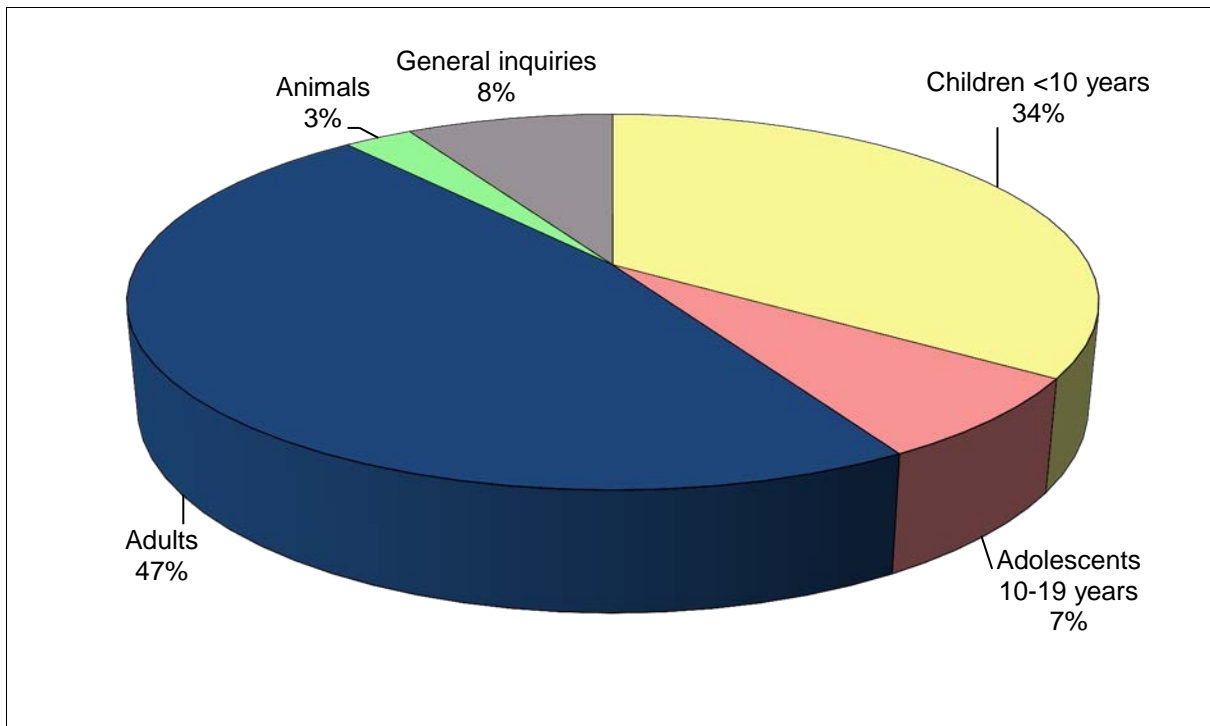


Figure 4. Incoming calls (n=86 397)

Human Poisonings/Poisoning Incidents

A majority of the 76 811 calls concerning human poisonings/incidents came from the general public, 30 % from medical/health care professionals and only a few percent came from other sources. (figure 5).

Half of the inquiries were related to adults, 39 % to children < 10 years and 8 % concerned adolescents (10-19) years. As the pattern of poisonings differs considerably in these groups they are reported separately.

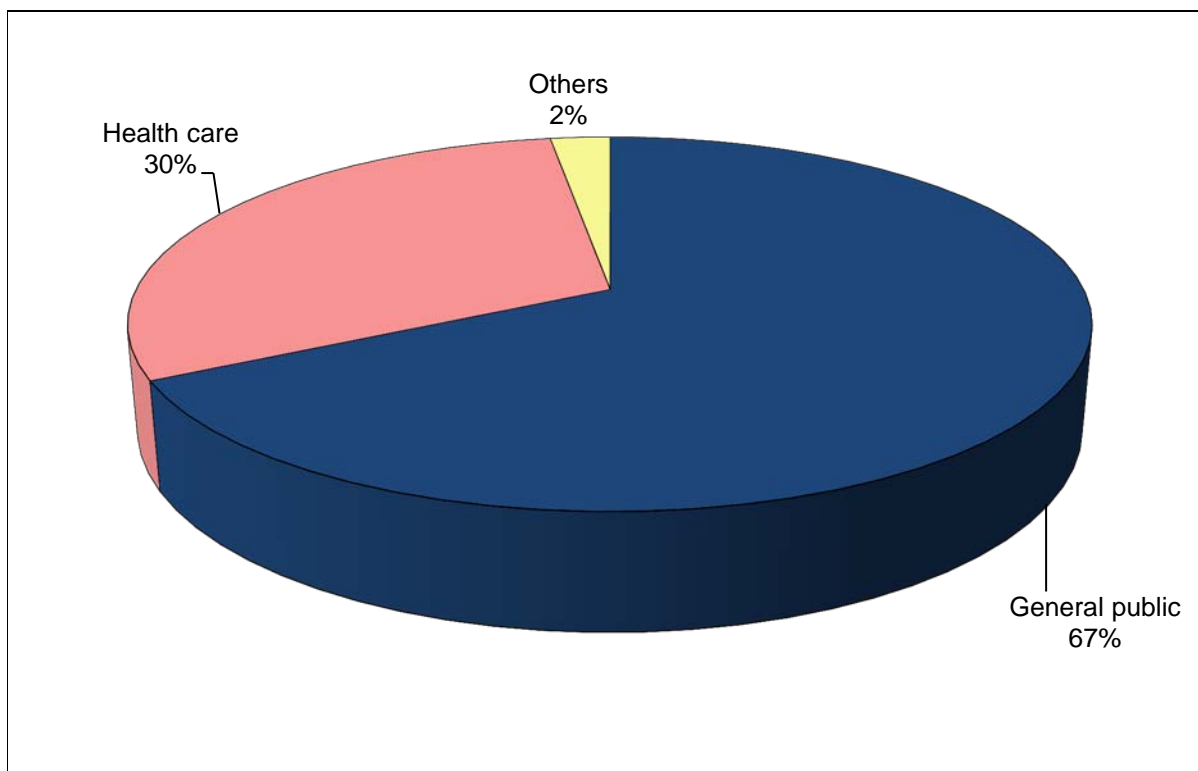


Figure 5. Inquirer of human poisonings/poisoning incidents (n=76 811)

Overdose with certain non-prescription painkillers - adults and adolescents 10-19 years

Over the years GIC has followed the development of number of overdose cases with the non-prescription painkillers paracetamol och ibuprofen. These are the two pharmaceuticals in this category that generate most inquiries (figure 6). Since November 1st 2009 some of these are available in retail stores, and there was a concern that the increased accessibility would lead to a sharp increase in the number of overdose cases.

The first year after the accessibility change there was no marked increase, but since the end of 2010 the number of inquiries concerning paracetamol overdoses increased with 15-20 % per year. Compared to 2009 the total increase in 2014 has been 86 % concerning paracetamol and 37 % concerning ibuprofen. In 2014, 67 % of the inquiries from healthcare concerned paracetamol and 50 % concerned ibuprofen.

GIC has continuously followed and reported these statistics, which has contributed to a proposal from the Swedish MPA to limit sales of paracetamol tablets only to pharmacies.

A final decision in this matter is expected during 2015.

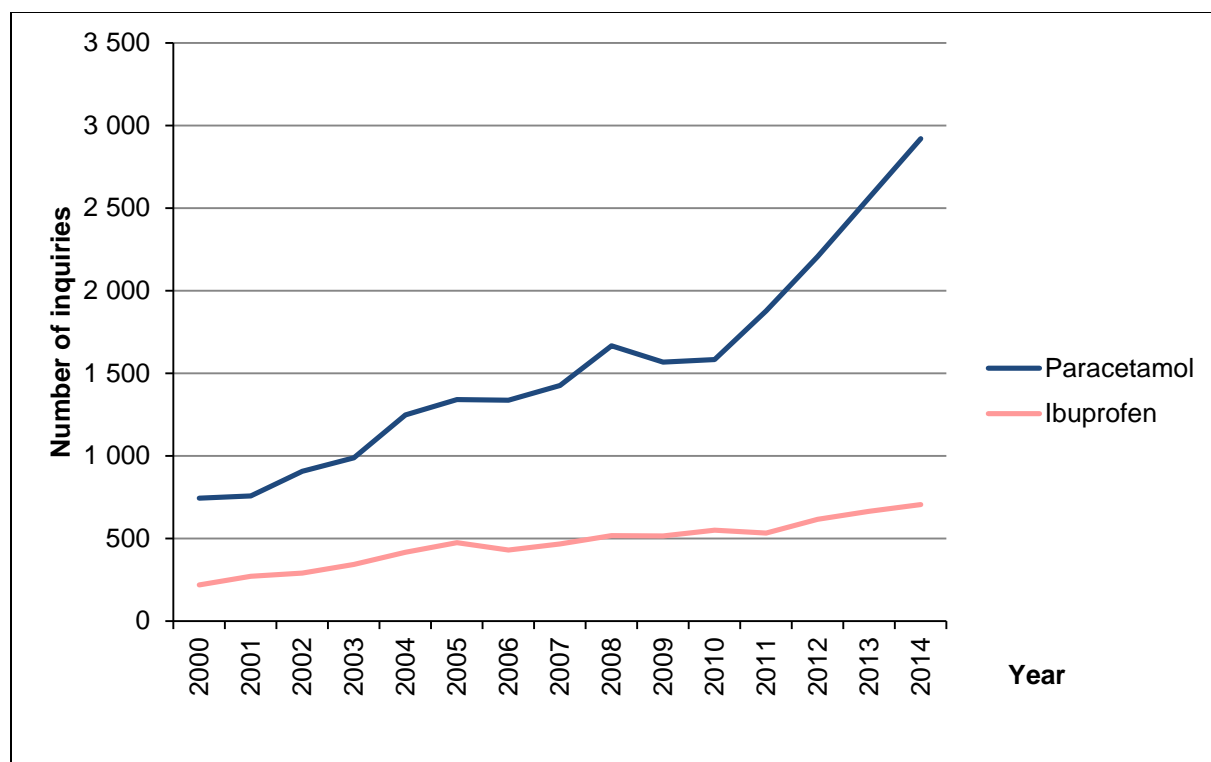


Figure 6. Number of inquiries concerning paracetamol and ibuprofen between 2000-2014. Adults and adolescents 10-19 years

Poisoning incidents among children <10 years

GIC received 29 802 calls concerning children <10 years. Close to 76 % involved children 1-4 years old, boys more often than girls (figure 7). Most of the poisoning incidents occurred at home. Ingestion was the main route of exposure (88% of the cases).

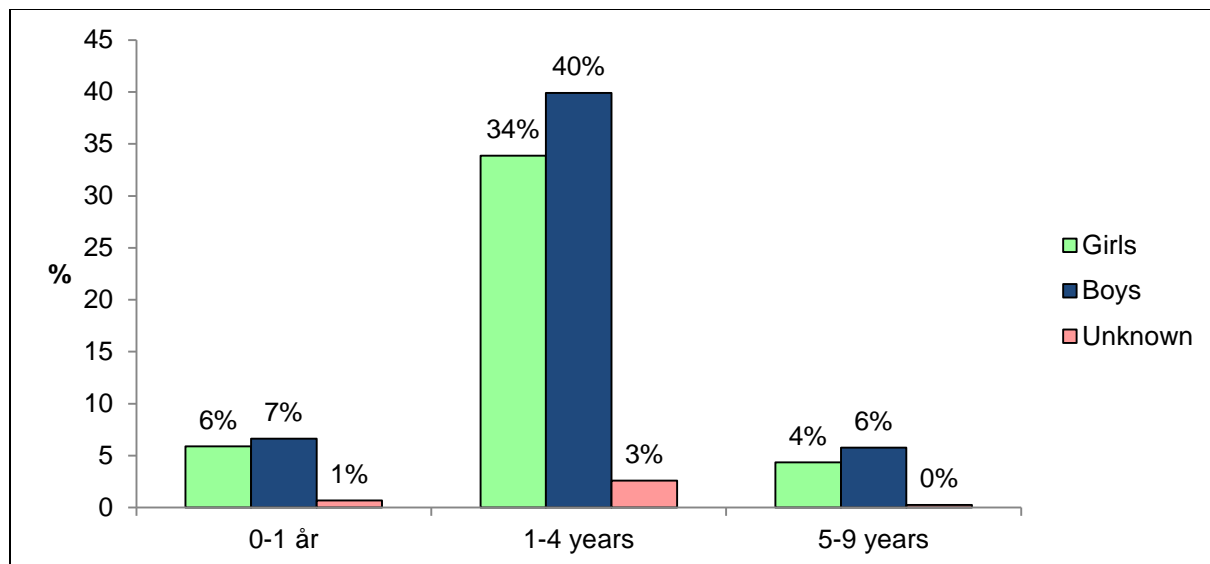


Figure 7. Incidents - Age/gender (%), children <10 years (n=29 802)

Half of the inquiries concerned children who had tasted chemical products, mostly household products or products for personal care. 28 % of the inquiries involved pharmaceuticals and 11 % plants and the remaining involved tobacco, mushrooms, insects and snakes (figure 8).

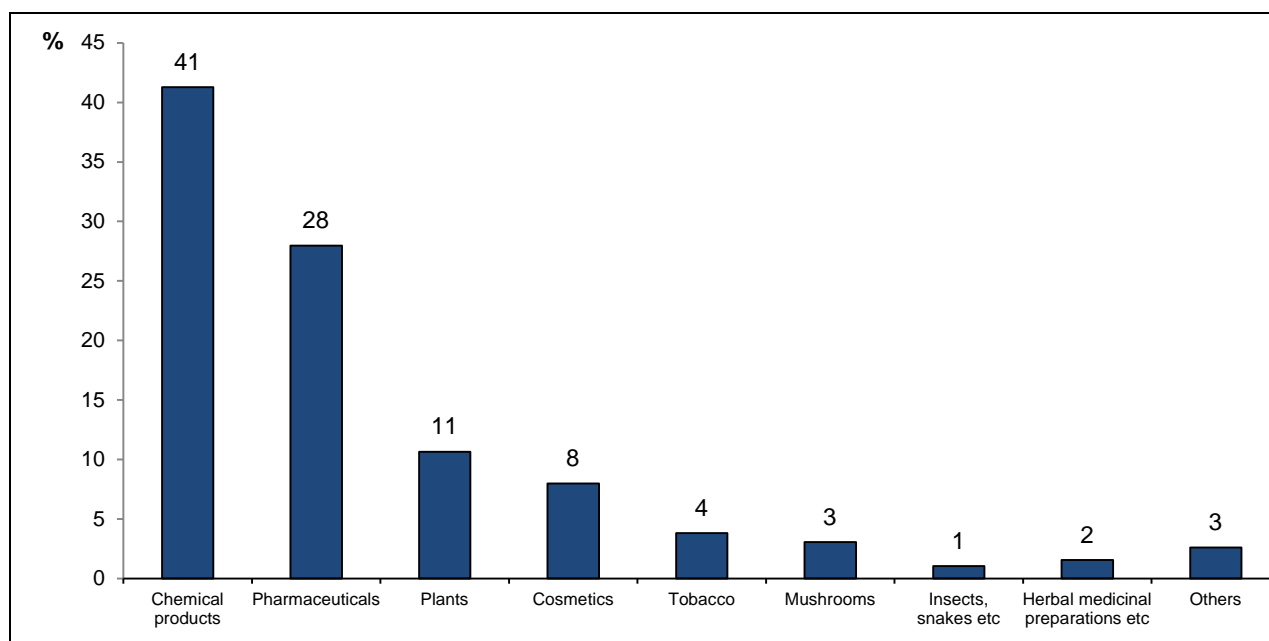


Figure 8. Poisoning agent (%), children <10 years (n=29 802)

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 questions about chemical products in brackets)

- **Cleaning products** (45 %). e.g. dishwasher detergents (10 %), washing-up liquids (6 %), laundry powder, wc-blocks/cleaning, all purpose cleaners etc.
- **Disinfectants** (5 %). e.g. products containing ethanol/isopropanol.
- **Pesticides** (4 %). e.g. insecticides.
- **Paint** (4 %). e.g. water based indoor paint.
- **Household products** (3 %). e.g. vinegar, salt.

The most common cosmetics and products for personal care involved in incidents were skin lotions, nail care products containing acetone/acetate, dental care products with fluoride and liquid soap/shampoo.

Of 14 686 paediatric poisoning incidents involving chemical products or cosmetics, the estimated risk was minor in 89% of the cases and could be dealt with at the accident site.

The remaining 11 % were recommended to seek medical care, or advice was given directly to health care personnel treating the patient. In 46 % of the poisoning incidents that led to hospitalization, the child had tasted a product that was corrosive (e.g. 24 % household acetic acid, drain cleaners, wart removing agents, bleaching/cleaning agents with hypochlorite, descaling products) or a product containing petroleum distillate (e.g. fire lighting fluid, lamp oil, fuel, solvent) which can cause chemical pneumonitis if aspirated. Button batteries can cause severe damage in the esophagus, and therefore the majority of the children that have swallowed button batteries are recommended to seek medical care to control that the battery has passed through the esophagus. The most common chemical products where the incidents were judged to be hazardous are listed in figure 9.

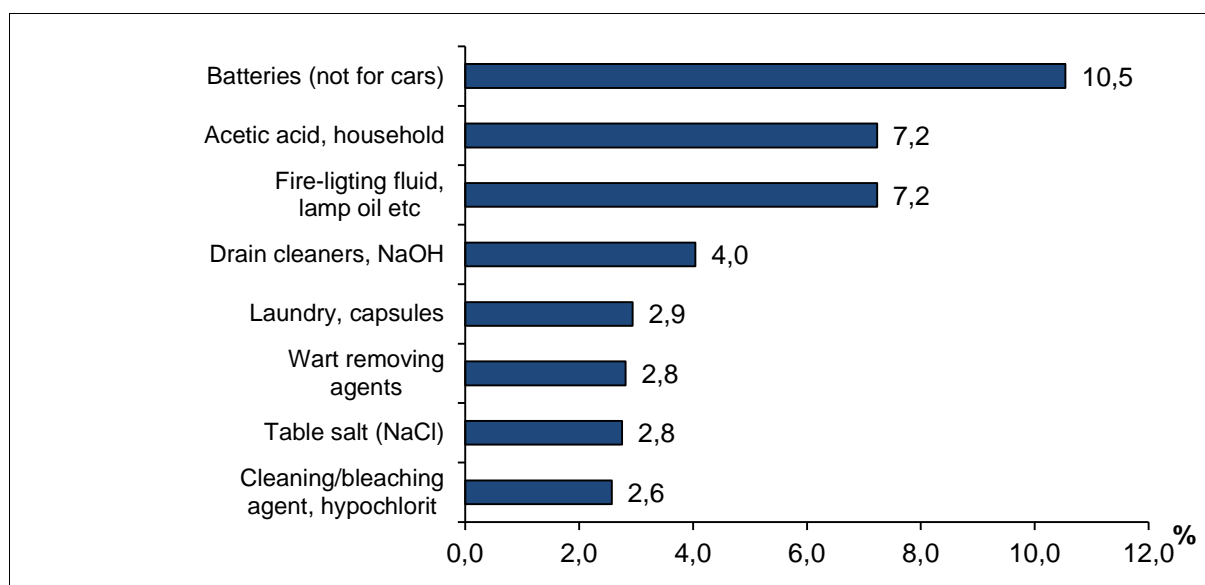


Figure 9. Most common chemicals /chemical agents or cosmetic/personal care products leading to medical care (% of the total number of chemical products leading to medical care) children <10 years (n=1 632)

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 questions about pharmaceuticals in brackets).

- **Analgesics**, including anti-inflammatory and antirheumatic pharmaceuticals (24%) e.g. paracetamol (13%), ibuprofen (7%), diclofenac.
- **Cough preparations** (9%) e.g. ethylmorphine combinations, bromhexine.
- **Antihistamines for systemic use** (5%) e.g. desloratadine, loratadine.
- **Vitamins** (5%) e.g. vitamin D.
- **Pharmaceuticals for dermal use** (5%) e.g. cortisone preparations.

The risk of poisoning was considered minor in 87% of the 8 333 inquiries related to pharmaceuticals. Common incidents which usually are 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 13% of the inquiries the caller was recommended to seek medical care or advice was given directly to health care personnel treating the patient. The most common pharmaceuticals in these cases are listed in figure 10. Quite toxic pharmaceuticals, such as e.g. malaria treatment, heart- and blood pressure medication or prescription pain medication, do not appear in this figure, as the total number of poisoning incidents with these pharmaceuticals was low.

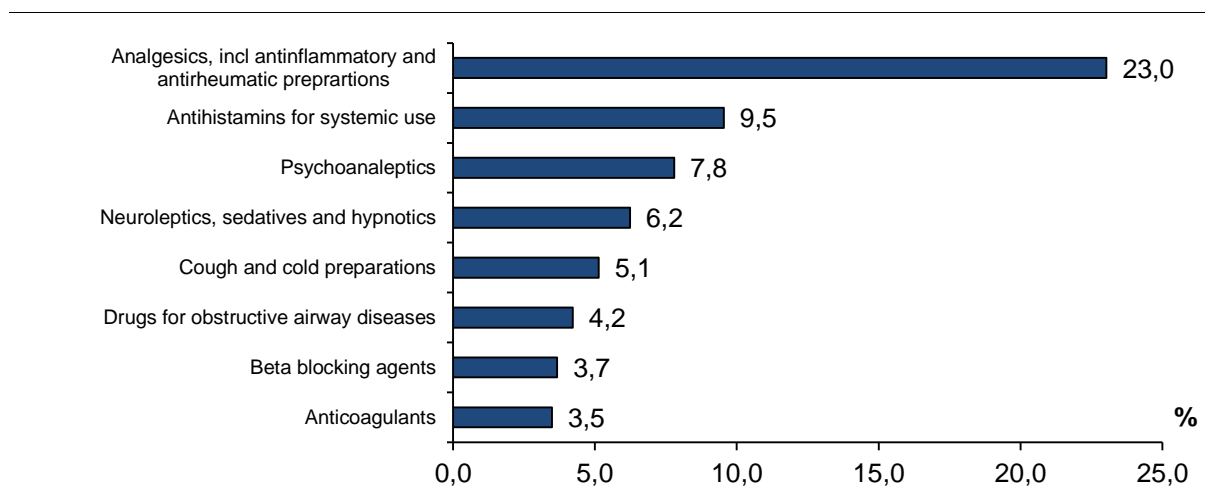


Figure 10. Most common pharmaceuticals leading to medical care (% of the total number of pharmaceuticals leading to medical care) amongst children <10 years (n=1 090)

Plants - children <10 years

Child poisoning incidents involving plants are usually harmless and in only 5% of the 3 175 inquiries the caller was recommended to seek medical care or advice was given directly to health care personnel treating the patient.

The most common incidents with poisonous plants involved Taxus, Lily of the valley, Laburnum, Monkshood and Foxglove (Digitalis). Other incidents that caused symptoms, although not poisoning, were cases where children had tasted plants with irritating sap (e.g. Zamioculcas), or had got irritating sap in the eyes.

Poisoning incidents in adolescents 10-19 years old

The total number of inquiries to the poisons centre concerning adolescents 10-19 years was 6 219. 41% of these inquiries related to attempted suicide or self-harm, in most cases with pharmaceuticals. In additionally 14% the overdose was intentional, but with unclear purpose. Close to a fourth of the incidents were due to accidents and 8% to abuse. Figure 11 shows the different causes of poisoning.

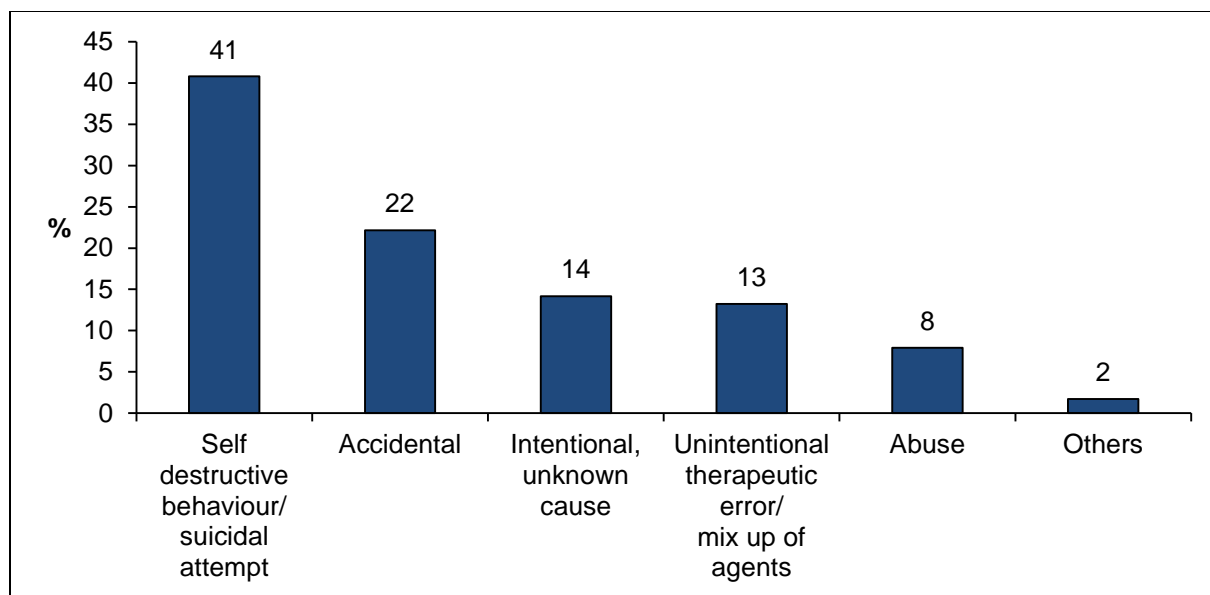


Figure 11. Cause, adolescents 10-19 years old (n=6 219)

In the adolescent group, poisoning with pharmaceuticals was most common and amounted to approximately two thirds of the inquiries. Chemicals/chemical products accounted for 16% of the calls, while other poisoning agents were used less commonly (figure 12).

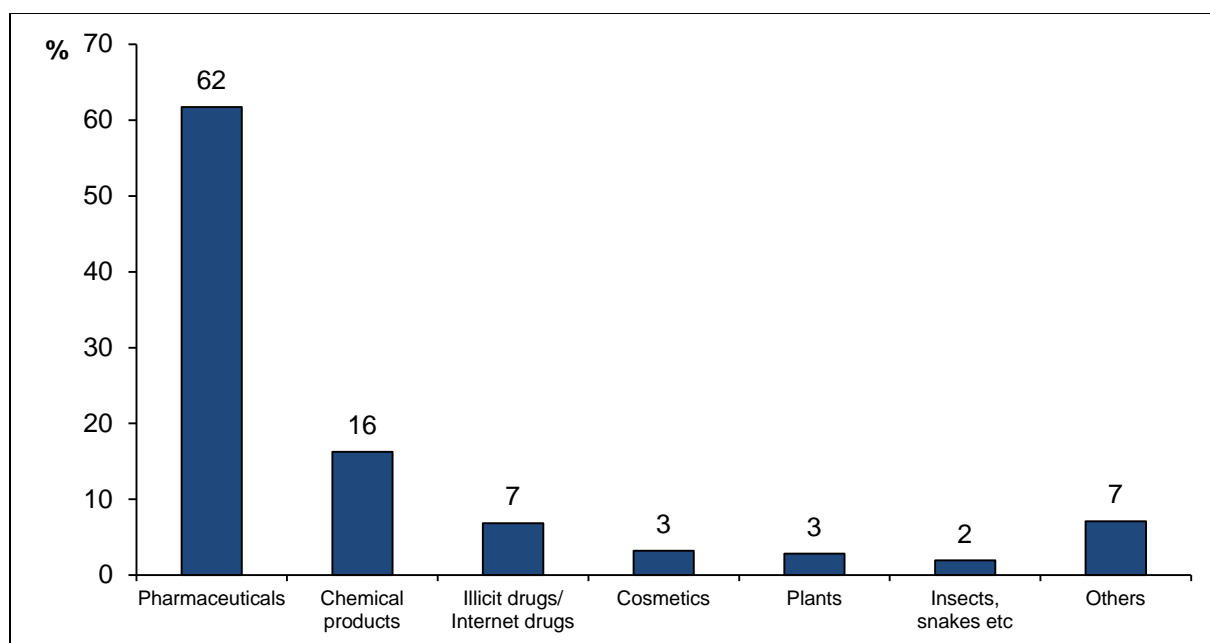


Figure 12. Poisoning agent, adolescents 10-19 years old (n=6 219)

Pharmaceuticals - adolescents 10-19 years

The 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 rheumatic pharmaceuticals (33%) e.g. paracetamol (21%), ibuprofen (6%), codeine combinations.
- **Psychoanaleptics, including ADHD pharmaceuticals, antidepressants** (22%) e.g. methylphenidate (8%), sertraline (5%), fluoxetine, atomoxetine.
- **Neuroleptics, sedatives, hypnotics** (15%) e.g. hydroxyzine, propiomazine, zopiclone.
- **Antihistamines** for systemic use (8%) e.g. promethazine, alimemazine.
- **Antiepileptics** (5%) e.g. lamotrigine, pregabalin.

Of the 3 839 inquiries in this group 63% were recommended to seek medical care or the advice was given directly to health care personnel treating the patient. For the remaining 37% the risk was low. The pharmaceuticals listed above were those most frequently causing a need for hospital care.

The inquiries about illegal drugs and internet drugs concerning this age group amounted to 426. Of those 83% were recommended to seek medical care or the advice was given directly to health care 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** (25%) e.g. washing-up liquids, all purpose cleaner, dish washer detergent.
- **Fuel** (10%) e.g. petrol (7%), fire-lighting fluid.
- **Gases** (9%) e.g. fire gases, carbon monoxide/exhaust fumes.
- **Disinfectants** (6%) e.g. products containing ethanol/isopropanol.

Inquiries about cosmetics/products for personal care mostly involved nail, skin and hair care products, and perfume. Incidents with these products are mostly harmless, but eye exposure to wart removing agents, hair colouring or some nail care products may constitute a risk.

The risk of poisoning was considered minor in 66% of the 1 211 inquiries, and could be cared for at the site of the incidence. The remaining 34% were recommended to seek medical care, or advice was given directly to health care personnel treating the patient. The most common chemical products that lead to medical attendance in this age group were disinfectants with ethanol/isopropanol, corrosive products (e.g. acetic acid (conc. 24%), drain cleaners, cleaning/bleaching agents with hypochlorite), petrol (which can cause pneumonia if aspirated and also constitutes a risk if inhaled) and gases (e.g. fire gases, carbon monoxide/exhaust fumes).

Most of the incidents were caused by mistakenly swallowed chemical products. In 9% of the cases the chemical products were ingested in a self-harming purpose. Incidents caused by eye contact or inhalation were also relatively common.

Poisonings/poisoning incidents in adults

Among adults various types of accidental exposures, including workplace accidents and incidents in home environment, caused one third of the 40 790 inquiries (figure.13). However, the most serious poisonings are found among the intentional incidents, including suicide attempts and abuse. These poisonings were caused mainly using pharmaceuticals or illicit drugs/internet drugs.

20% of the inquiries concerned therapeutic errors. In this group unintentional overdosing of pharmaceuticals at home dominated (mostly double dose), which rarely lead to poisoning.

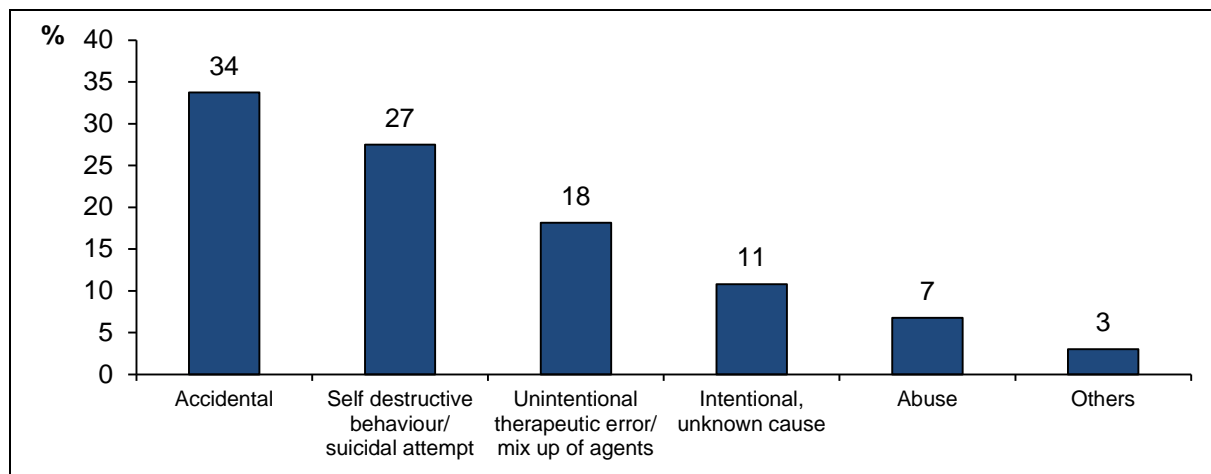


Figure 13. Cause of poisoning (%), adults (n=40 790)

Over half of all adult poisoning inquiries were related to pharmaceuticals. Inquiries about chemicals/chemical products constituted 27%, illicit drugs/internet drugs 6%, while plants, insects, snakes and mushrooms caused a minor part of all incidents (figure 14).

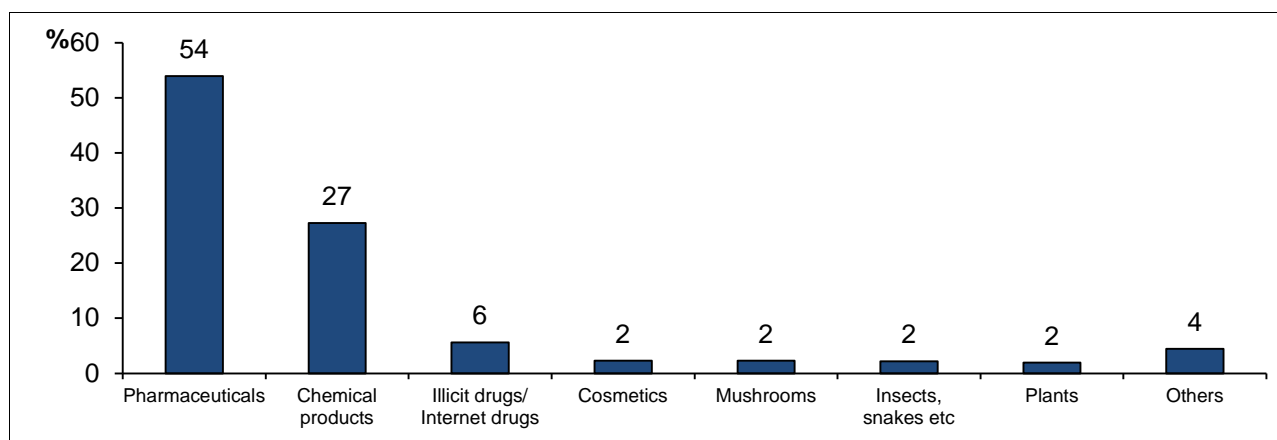


Figure 14. Poisoning agent (%), adults (n=40 790)

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** (24%) e.g. zopiclone, propiomazine, zolpidem, oxazepam.
- **Analgesics, including anti-inflammatory and antirheumatic pharmaceuticals** (22%) e.g. paracetamol (10%), tramadol, ibuprofen.
- **Psychoanaleptics, including ADHD pharmaceuticals, antidepressants** (13%) e.g., methylphenidate, quetiapine, sertraline.
- **Antiepileptics** (6 %) e.g. pregabalin, lamotrigine.
- **Antihistamines** (5 %) e.g. promethazine, alimemazine.

Among the 21 992 inquiries concerning adults, 60% were recommended to seek medical care, or advice was given directly to health care personnel treating the patient. In this group there were many serious cases of overdosing. For the remaining 40%, 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 pharmaceutical.

In adults, the number of inquiries related to internet drugs or illicit drugs amounted to 2 299, which is a nearly 40% increase from 2013. Out of these, 83% were recommended to seek medical care or advice was given directly to medical personnel treating the patient.

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** (30%) e.g. washing-up liquid, cleaning/bleaching agents with hypochlorite, descaling agents, dish-washer detergent.
- **Gases** (12%) e.g. fire gases, carbon monoxide/exhaust fumes, ammonia.
- **Car products** (7%) e.g. antifreeze/brake fluids, lubricants.
- **Fuel** (8%) e.g. petrol, fire-lighting fluid/lamp oil.
- **Disinfectants** (7%) products containing ethanol/isopropanol.

Inquiries about cosmetics/products for personal care mostly involved nail, skin and hair care products, and preparations for treating warts. Incidents with these products are mostly harmless, but eye exposure to anti-wart agents, hair colouring or some nail care products may constitute a risk.

The risk of poisoning was considered relatively low in 65% of the 12 057 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 health care 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, descaling agents, alkaline cleaning agents) and anti-freeze agents containing ethylene glycol. In cases where disinfectants or antifreeze agents caused severe

poisoning requiring hospitalization, the products had usually been consumed as a substitute for alcohol.

In slightly above half of the inquiries related to chemicals, the route of exposure were through inhalation or eye contact. Ingestion of a chemical product by mistake was also relatively common.

Animal poisonings/poisoning incidents

Human poisonings are always prioritized, but during office hours GIC also gives advice in poisoning cases concerning animals (contingent available information.)

Out of the 2 394 calls, 84% concerned dogs, 14% to cats and 2% to other animal species.

A scarce majority of the inquiries involved chemical products (mainly household products), 28% to pharmaceuticals, and 16% to plants (figure. 15). The risk of poisoning was considered relatively low in 71% of the inquiries. The remaining 29% were recommended veterinary contact or advice was given directly to a veterinary treating the animal. In this group 15% had ingested pesticides (particularly rodenticides). 10% were dogs that had eaten chocolate and 6% were dogs or cats that had ingested anti-inflammatory or antirheumatic drugs, which they are sensitive to.

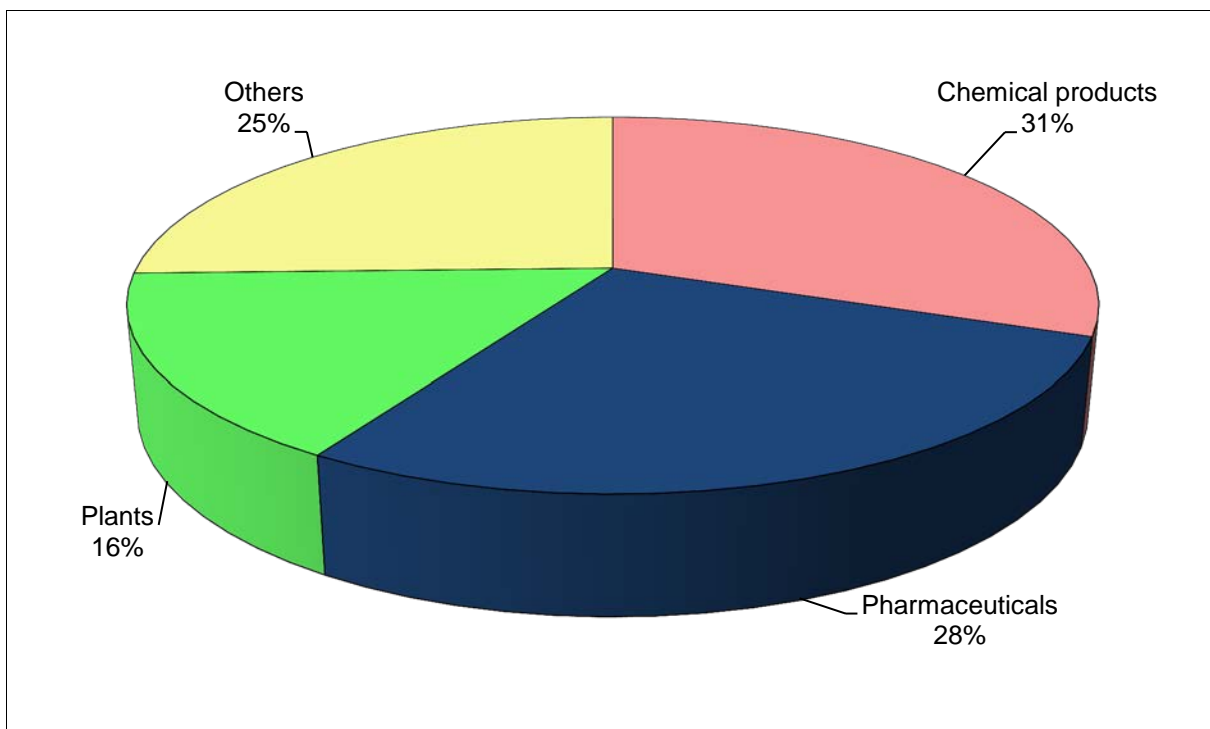


Figure15. Poisoning agent, animals (n=2 394)

Sources of information for GIC

Toxicological and medical data is collected from different sources, processed by GIC staff, and integrated into our database, to be used as a basis for the advice given in the telephone service. Sources include articles published in the international medical literature, case records, as well as information about newly registered drugs. The means and ways of poisoning are continuously changing, as well as treatment methodology, which makes it very important to continuously quality control and update the information in the GIC database.

Substance monographs

A substantial part of the database consists of substance monographs focusing on risk, symptoms and treatment in poisoning. The ambition is to have updated monographs of those pharmaceuticals, chemical substances and biological toxins, which are frequently causing poisonings.

Discharge records from hospitals

One important source in the telephone service is the discharge records (summary of medical records) that the hospitals on a voluntary basis send to GIC. Especially important is the information about new substances on the market, both pharmaceuticals and chemicals. During 2014, 80% of the discharge records sent to GIC involved pharmaceuticals and the remaining involved chemicals or biological toxins.

Product information

Incidents with chemical products are relatively common. In 2013, GIC was officially appointed to be the body responsible for receiving information about chemical composition of products, according to Regulation (EU) 1272/2008 Classification, Labelling and Packaging (CLP). This information is used for formulating preventative and curative measures, in particular in the event of emergency health response.

Follow-ups and projects

Follow-ups

Poisonings with newly registered pharmaceuticals and chemical products, or special cases/conditions are documented routinely and the cases are followed up. In 2014 the following have been given extra attention:

- e-cigarettes
- ethylene glycol (see "Project")
- extravasal injection and intravenous dosing errors
- European adder – serum cases, especially when dose has been repeated
- internet drugs – new substances of abuse (see Project)
- corrosive alkaline drain cleaners
- pharmaceutical drugs purchased via Internet
- laundry detergent capsules
- dishwasher detergents- eyes
- methotrexate
- herbal remedies/medicine
- new pharmaceuticals
- paracetamol – depot/injection
- wart removal products containing formic acid or trichloroacetic acid

Projects

Mushroom Identification project: Our pharmacists are trained in identifying mushrooms, and modern technology, using pictures sent in via SMS or e-mail, often enables fast determination of toxicity risk. There are however cases where this is quite challenging.

A pilot project was initiated in 2013, in which GIC established collaboration with a mycologist, who is on call for consultation 24h/day throughout mushroom season. The project was evaluated during 2014, assessed as effective and valuable, and these working methods and techniques have now been incorporated in GICs standard routines. During 2014 the consultation service was used in 64 especially difficult cases.

Antifreeze agents project: A project performed in collaboration with the Swedish Chemicals Agency, focusing on products containing ethylene glycol and aiming to limit/eliminate these very poisonous products from the market. The project continues during 2015.

Corrosive alkaline drain cleaners project: Another project performed in collaboration with the Swedish Chemicals Agency with the aim to decrease the number of incidents with these corrosive products. The project continues during 2015.

Website project: During 2014 a project group worked with experts to modernize and adapt GICs both websites to mobiles (Giftinformation.se, aimed at the general public, and Giftinfo.se, aimed at medical professionals), the two websites have merged to one with a specific link/gateway for doctors/physicians. The new site was launched in November

Collaborative project regarding Toxicity Investigation and Risk Assessment of Internet drugs based on clinical analyses (STRIDA)

A relatively new and growing phenomenon is that many synthetic drugs of abuse or psychoactive plants or mushrooms are sold on various websites (*Internet drugs*) as legal alternatives to illegal drugs. The selection of drugs is changing rapidly while the information on their injurious effects is extremely limited. The number of inquiries to GIC concerning *Internet drugs* has increased dramatically in recent years. Therefore GIC has taken the initiative to the project STRIDA, in cooperation with the department of Clinical Pharmacology, Karolinska University Laboratory, aiming to gain access to current information on the prevalence of *Internet drugs*, content of active ingredients and their acute toxicity. Another aim with the project is to provide data about the drugs to authorities responsible for legislation so drugs that turn out to be hazardous may be classified as narcotics. 742 samples have been analysed in 2014.

Leonardo da Vinci project:

In order to create opportunities for education and information exchange with other Poisons Information Centres in Europe, GIC participates in a collaborative project within EU, known as the Leonardo da Vinci project.

In 2014 GIC employees have visited the Poisons Information Centres in Holland, Denmark, France and Spain. There will also be one information exchange visit in 2015.

Newly registered pharmaceutical drugs- overdose

Overdoses with pharmaceuticals registered during the past five years are under special supervision. Incoming discharge records of particular interest are summarized in brief. From this material the pharmaceutical companies can request the specific cases involving their own drugs.

Tutorial – medical student 11th term

“Lipid therapy, a new controversial treatment for acute poisoning” A systematic literature overview of all published human cases. The report will be submitted in March 2015.

Assignments and collaborations

National

The centre collaborates with a number of national organizations like the Public Health Agency of Sweden, the Swedish Chemicals Agency and the National Board of Health and Welfare. Other assignments on a national basis are e.g. providing specialist education of physicians in training (Acute Poisoning and Metabolic Syndromes), providing expert educational/informative texts or lectures, and expert roles in publication reviews.

International

- General Secretary of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT)

- Representative in EAPCCT working group on the harmonisation of information about chemical mixtures to be submitted to Poison Centres in accordance with the Regulation (EU) 1272/2008, Classification, Labeling and Packaging (CLP)
- Representative in EAPCCT and AAPCC expert group with the assignment to update a number of "Position Statements"
- Member of the editorial board for the journal of Clinical Toxicology, and referee assignments for the same journal.
- Member of the newly established EU-commission CPNP expert working group (Cosmetic Products Notification Portal)
- Member of the European Chemical Industry Council (CEFIC). ICE (Intervention in Chemical Transport Emergencies) Integration Group
- Representative in the European Chemical Industry Council (CEFIC) ICE Integration In collaboration with IKEM –Innovation and Chemical Industries in Sweden.

Published Articles

- Höjer J, Olsson E. AV block II in a toddler after ingestion of a single tablet fingolimod. *Clin Toxicol* 2014;52:644.
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- Jonsson B, Backman E, Salmonson H, Höjer J. Injection of crushed tablets - a prospective observational study. *Clin Toxicol* 2014;52:982-3.
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- Bäckberg M, Lindeman E, Beck O, Helander A. Characteristics of analytically confirmed 3-MMC related intoxications from the Swedish STRIDA project. *Clin Toxicol* (Phila) 2015;53:46-53. Epub 2014 Nov 25.
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