



Schweizerisches Toxikologisches Informationszentrum
Centro Svizzero d'Informazione Tossicologica
Centre Suisse d'Information Toxicologique
Swiss Toxicological Information Centre

■ Annual Report 2013

www.toxi.ch
Associated Institute of the University of Zurich

Contents

- 3 **Editorial**
- 4 **Introduction**
- 5 **Focus**
- 6 **Emergency and information service**
 - 6 Overview of all enquiries
 - 8 Human poisoning
 - 14 Animal poisoning
- 16 **Other activities**
 - 16 Services
 - 16 Teaching and continuing education
 - 16 Research projects
 - 16 Collaborations
- 18 **The Swiss Antidote Network**
- 20 **Publications**
- 21 **Income and expenditure**
- 22 **Donations**

■ Editorial

Dear Reader

For almost 50 years now, the Swiss Toxicological Information Centre (TOX) has been valued highly by the public in case of poisonings and enjoys great trust. This is good.

Less well known is the telephone number 145, especially amongst younger generations. In addition, the public is not aware that the TOX is a foundation relying on donations and support. This is thought-provoking and calls for action.

Solidarity

Ensuring that the large number of annual enquiries can continue to be answered free of charge to the public in the future requires not only the solidarity of supporting institutions such as the Swiss Confederation, the cantons, industry, organisations, companies and professional bodies. Guaranteeing the services of the TOX in the same quality 24/7 in the future requires the contribution of everybody. This includes the general public!

The general public's trust in getting instantaneous help in a poisoning emergency will only be safe in the future if the altruistic idea of common support is applied: to take joint responsibility for such a unique foundation means to support it with donations.

There is pent-up demand and it will not be easy to get the necessary attention for our concern: the public has to understand that a supposedly «safe value» can only be secure if it is shown the necessary appreciation. We have to succeed in gaining presence in and attention by the public.

The forthcoming 50 year anniversary in 2016 is a unique chance to raise the profile of the TOX and reinforce its position. Our stated aim until 2016 is to increase recognition of the TOX as a foundation and for the telephone number 145 to be securely anchored in the public's mind. The TOX has to be prepared for the future and its continued existence needs to be financially secure!

For this purpose, a contemporary visual design and corporate identity are currently being worked on, and projects are envisaged to achieve the stated goals and to activate the public's willingness to make donations.

The TOX is unique!

As President of the Foundation Council I observe a great work ethic of all staff at the TOX. Be it on the telephone or in personal contact in the office, one can feel that members of staff like to work at the TOX and show tremendous dedication. It is meaningful to work at the TOX. Let us do everything we can so that the public will contribute to such a unique foundation with the same conviction as we do!

Elisabeth Anderegg-Wirth
President of the
Foundation Council





Introduction

The annual report for the year 2013 of the Swiss Toxicological Information Centre (STIC) provides in the usual manner information on enquiry statistics, type and severity of poisoning incidents, educational activities, research projects, collaborations, the Swiss Antidote Network and publications. The section entitled «human poisoning» is limited to a tabular format of poisoning incidents. More detailed information can be found in an appendix to this annual report which is accessible on our website. Graphical illustrations have been added to the website showing the development over the last ten years.

In 2013 36405 consultations were carried out by the STIC. Thus we saw a slight decrease in the number of consultations in the reporting year (–1.17 % versus 2012, however +2.33 % over the past three years). As in previous years theoretical (preventive) enquiries decreased further (–10.69 %), the decrease in consultations following exposures is minimal (–0.22 %). The trend continues that the general public and experts alike access information via the internet, whereas personal advice over the phone in case of an exposure remains a vital need despite the many offerings of the electronic media. The expert advice given on the phone is superior to any other kind of information gathering as it is immediate, direct and without long searches. Furthermore, the caller wants to talk to an expert with whom he can clarify the clinical situation and who accepts technical responsibility for the information given. Nothing can replace the dialogue between the caller and the poisons information specialist.

The number of consultations for accidental poisonings has once again slightly increased (+1.13 %). However, the consultations relating to intentional poisonings decreased (–6.52 %), which corresponds to the previous years' trend. The number of repeat consultations per case has remained unchanged since last year at 5.9 % for accidental intoxications and 18.0 % for intentional poisonings reflecting the higher complexity of the latter. There has been a slight decrease in consultations with regard to poisonings in animals (–1.7 %).

The number of moderate and severe poisonings increased slightly compared to the previous year (1330 as opposed to 1292, +2.94 %), especially in children (+30.3 %, +0.4 % in adults). The STIC recorded 12 fatal poisonings in humans in the reporting year (adults only), which corresponds to the average for previous years. In animals 6 fatal cases were seen. Pharmaceuticals as well as pesticides and drugs caused the fatal poisonings in humans. For the first time in many years there were no tricyclic antidepressants in this group.

Like many poisons information centres abroad, the TOX also answers enquiries relating to acute poisonings in animals. Specialised animal poisons information centres exist in very few countries (France, United Kingdom). This means that the centres' experts in human toxicology also have to be aware of idiosyncrasies in animal toxicology. Close collaboration with a university veterinary institute is essential to ensure the quality of advice and the continuing education of the poison information specialists. The TOX therefore has maintained contact for many years with the Institute of Veterinary Pharmacology and Toxicology of the University of Zurich at the animal hospital Zurich and also employs a veterinarian. Apart from a variety of livestock and domestic animals the advice sought relates mostly to dogs and cats. For the first time, a focus in this year's annual report is on animal poisonings.

Publications of scientific projects in the reporting year covered erroneous administration of pharmaceuticals, poisonings with immune suppressants, tricyclic antidepressants, neuroleptics or drugs of abuse, and the effects of spider bites in Switzerland. Increasingly, the TOX also observes overdoses of new anticoagulants which prompted an in-depth analysis of a well-documented case with Rivaroxaban. A considerable number of publications resulted from collaborations with colleagues in other poisons information centres or hospitals.

Publications resulting from completed projects can be found in the list of publications included in this annual report.

■ Focus

Like many poisons information centres the TOX also takes calls related to **poisonings in animals**. The number of these enquiries has been increasing steadily in the last few years and amounts to about 1600 per annum. The challenge lies in species-specific particularities in toxicity which this focus will concentrate on.

Not everything enjoyed by human beings is easily digested by animals. Some **human food** can be dangerous for pets. This particularly applies to dogs that devour large amounts in one go; cats are far less at risk because of their picky eating behaviour. In dogs, for example, ingesting **chocolate** can lead to vomiting, agitation, seizures, cardiac arrhythmia and even death because of its content of theobromine. Theobromine is a substance related to caffeine. The darker the chocolate, the more theobromine it contains. **Macadamia nuts** also disagree with dogs. They can lead to gait disorders, weakness of the hind leg, vomiting, stomach pain, fever and tremors. The dogs recover spontaneously within two days. **Grapes** or **raisins** cause a brief episode of vomiting, lethargy and stomach pain in dogs followed by acute renal failure which can be fatal. The same effect can be seen with grape pomace, leftovers after pressing of the grapes, which is also utilized in the production of commercially available fertilizers. Food sweetened with **xylitol** should not be given to dogs as it causes severe hypoglycaemia which can lead to liver damage. Cats and dogs also react sensitively to **cooking onions**: the ingredients can cause haemolysis which leads to anaemia and brown urine.

Mefenamic acid is a pain killer widely used in Switzerland. It is prescribed for adults with a dosage of 500 mg 3 to maximally 4 times daily. Even minor overdosage of more than 3.5 g of mefenamic acid can lead to seizures in humans. The danger to domestic pets is much less clear. Between 1997 and 2013 59 animal poisonings with mefenamic acid were recorded at the TOX (46 dogs, 13 cats). The animals ingested between 10 and 900 mg/kg body weight. 20 showed

no symptoms, 22 minor, 12 moderate, 4 severe and one leading to death. The central nervous system was most commonly affected with gait disturbances, drowsiness, tremors, muscle twitching being observed, furthermore vomiting, diarrhoea and salivating. 11 animals suffered from generalised seizures with an ingested dose of minimum 50 mg/kg in cats and from 66 mg/kg in dogs. Cats and dogs therefore appear to be as sensitive as humans. One cat died after ingesting 125 mg/kg with apnoea following repeated seizures. Animal owners should therefore not give their mefenamic acid as pain killers to their animals; small animals can develop severe symptoms following an accidental ingestion of one 500 mg tablet. There is no specific antidote and treatment is only symptomatic.

Birds react much more sensitively to inhalation toxins than mammals or humans due to the anatomy of their lungs. Birds kept indoors have repeatedly died following heating of **Teflon**-coated crockery or baking foils (polytetrafluoroethylene, PTFE). In 2013 the TOX registered a case of 3 budgerigars dying in the kitchen after a pan overheated on the stove. Thermal decomposition of Teflon occurs at temperatures of more than 202°C leading to the release of ultrafine PTFE-particles that can already prove fatal in birds. Birds should not be kept in the kitchen as butter or oils heated to very hot temperatures can also be fatal. Poisoning symptoms in birds include nervousness, dyspnea, apathy and death within 30 minutes; bleeding, oedema and necrosis can be seen in lung tissue under the microscope.



Emergency and information service

The main services provided by the STIC are free telephone consultations for members of the general public and physicians in cases of acute and chronic poisoning. In addition, the centre answers theoretical enquiries and contributes greatly to the prevention of accidental poisoning.

All calls to the information service of the STIC are recorded electronically in its own database, and are analysed in the Annual Report.

Overview of all enquiries

Use of the service

In 2013 the information service of the STIC received 36405 enquiries which represents a reduction of -1.17% compared to the previous year.

Figure 1

Number of enquiries to the STIC over the last ten years

2004	31 404
2005	33 512
2006	31 184
2007	31 933
2008	33 366
2009	34 022
2010	34 283
2011	35 576
2012	36 837
2013	36 405

Origin of calls

Table 1 shows the number of calls received in 2013 from the individual cantons of Switzerland and the different population groups.

The largest number of calls came from the general public (64.9 %). These calls reflect the need for information by the general public, and also how well the STIC is known amongst the public. The largest proportion of calls from the public originated from the canton of Obwalden (4.3 per 1000 inhabitants). The smallest number of calls was received from the cantons of Tessin, Uri and Glarus.

Physicians used our service 9433 (25.9 %) times. Calls made by hospital physicians decreased by 310 compared to the year 2012, whereas calls received from general practitioners increased (+33). Veterinarians accounted for 744 calls to the STIC. Based on population, the largest proportion of physician calls came from the cantons of Basel Stadt, Schaffhausen and Zurich, followed by Jura and Vaud. Pharmacists submitted 480 inquiries to the STIC.

The STIC answered 92 requests for information from the media (newspapers, radio and television). 2010 enquiries were received from organisations such as emergency services, care homes, industry, poison centres abroad and non-specified organisations.

Table 1
The number of calls received in 2013 by cantons and population groups

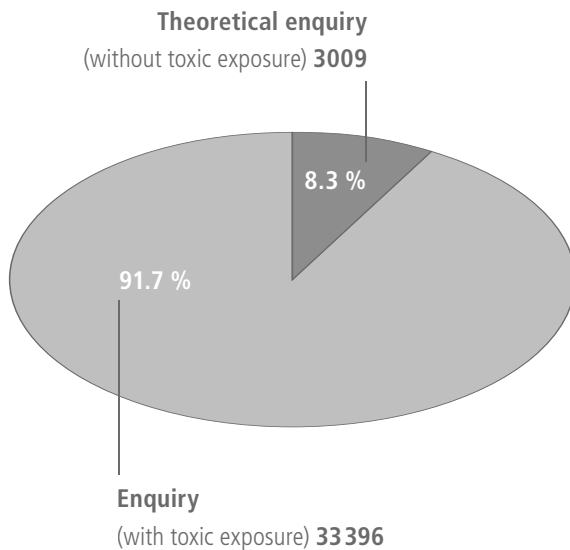
Canton	Population	General public	Hospital doctors	Practitioners	Veterinarians	Pharmacists	Various	Total	Calls/1000 inhabitants Public	Physicians
AG	627 340	1836	586	74	52	45	153	2746	3.0	1.2
AI	15 717	40	1	1	–	–	3	45	2.5	0.1
AR	53 438	164	42	11	8	–	15	240	3.1	1.1
BE	992 617	3185	935	185	89	55	256	4705	3.2	1.2
BL	276 537	796	157	32	18	6	39	1048	2.9	0.8
BS	187 425	592	390	43	1	24	63	1113	3.2	2.3
FR	291 395	794	230	26	22	33	56	1161	2.8	1.0
GE	463 101	975	356	79	26	30	64	1530	2.1	1.0
GL	39 369	73	25	13	9	–	5	125	1.9	1.2
GR	193 920	475	156	57	22	7	38	755	2.5	1.2
JU	70 942	142	97	6	3	8	4	260	2.0	1.5
LU	386 082	892	312	76	14	8	117	1419	2.3	1.1
NE	174 554	392	143	14	15	19	55	638	2.3	1.0
NW	41 584	86	24	6	3	–	7	126	2.1	0.8
OW	36 115	153	15	16	1	1	5	191	4.3	0.9
SG	487 060	1234	404	77	54	13	135	1917	2.6	1.1
SH	77 955	239	103	14	4	9	35	404	3.1	1.6
SO	259 283	751	169	41	21	7	58	1047	2.9	0.9
SZ	149 830	370	105	19	5	2	26	527	2.5	0.9
TG	256 213	691	216	51	25	9	65	1057	2.7	1.2
TI	341 652	484	334	28	8	26	21	901	1.4	1.1
UR	35 693	60	22	3	3	–	3	91	1.7	0.8
VD	734 356	1874	708	119	81	55	133	2970	2.6	1.3
VS	321 732	685	216	55	26	21	59	1062	2.2	0.9
ZG	116 575	303	76	23	14	5	31	452	2.6	1.0
ZH	1 408 575	5648	1612	372	180	92	593	8497	4.1	1.6
FL	36 838	92	15	10	–	1	9	127	2.5	0.7
Foreign	–	252	510	20	39	1	39	861	–	–
Unknown	–	366	1	2	1	3	17	390	–	–
Total	8 075 898	23 644	7960	1473	744	480	2104	36 405	3.0	1.3
%	–	64.9	21.9	4.0	2.0	1.3	5.8	100	–	–



Types of calls

Calls can be subdivided into enquiries without exposure and enquiries where exposure has taken place.

Figure 2
Types of calls (n = 36405)



Among the 3009 calls (compared to 3369 in the previous year, -10.7 %) without toxic exposure, frequent questions concerned drugs and antidotes, toxicity of plants to children and pets, and the risk of poisoning from spoilt food, household products and chemicals, with the recommendations given by the STIC being predominantly of a preventive nature. This subcategory also includes advice and preparing reports for authorities, media, private individuals and various organisations as well as distribution of fact sheets and referring enquiries to appropriate experts.

The 33,396 enquiries following toxic exposure concerned 31797 humans (compared to 31844 in the previous year, -0.15 %) and 1597 animals (compared to 1624, -1.66 %) and 2 cases where the victims are unknown. The following section discusses human poisoning, whereas animal poisoning is dealt with in a separate section (pages 14-15).

Human poisoning

Table 2 shows an overview of the calls received with toxic exposure (29435). Children were involved in 53.5 % of the cases, adults in 46.4 %. In 23 cases (0.1 %), the age group remained unknown.

The highest number of cases involved children below five years of age (44.2 %). Boys were more frequently represented amongst the children (51.0 % vs. 47.7 %) and women amongst the adults (57.6 % vs. 41.9 %).

Table 2
Age and gender of human cases with toxic exposure

	Age	female	male	unknown	Total		
Children		7513	47.7 %	8024	51.0 %	200	15 737
Age	<5 years	6161	82.0 %	6754	84.2 %	109	13 024
	5 – <10 years	606	8.1 %	699	8.7 %	14	1 319
	10 – <16 years	532	7.1 %	404	5.0 %	1	937
	unknown	214	2.8 %	167	2.1 %	76	457
Adults		7880	57.6 %	5731	41.9 %	64	13 675
Age	16 – <20 years	535	6.8 %	343	6.0 %	–	878
	20 – <40 years	1627	20.6 %	1369	23.9 %	–	2 996
	40 – <65 years	1453	18.4 %	1092	19.1 %	5	2 550
	65 – <80 years	309	3.9 %	255	4.4 %	–	564
	80+ years	201	2.6 %	114	2.0 %	–	315
	unknown	3755	47.7 %	2558	44.6 %	59	6 372
Unknown		7	30.4 %	7	30.4 %	9	23
Total		15 400	52.3 %	13 762	46.8 %	273	29 435

Circumstances of poisoning

Table 3 shows the circumstances of poisoning in the 29 435 cases with toxic exposure. **Acute accidental intoxications** (23 064 compared to 22 902 in the previous year, +0.71 %) represented the largest group. These occurred frequently at home with children ingesting easily accessible pharmaceuticals, household products or plant parts. Adults too were involved in toxic exposures at home, but a significant number of enquiries also involved work place accidents (1096).

Acute intentional poisoning was mostly due to attempted suicide (3 470 cases, compared to 3 674 in the previous year, –5.55 %), less frequently due to drug abuse (572 cases); poisoning incidents involving a third party («criminal poisonings») were rare (125, previous year 112).

Chronic poisoning was relatively rare (1 139 cases) compared to acute intoxications. **Adverse drug reactions** in therapeutic doses led to 262 information requests. These were mainly related to the establishment of a causal link between the observed symptoms and the medication taken.



Table 3
Circumstances of toxic exposures

Circumstances of toxic exposures		Acute poisoning (Exposure <8h)	Chronic poisoning (Exposure >8h)
Accidental domestic	20 745	70.5 %	559 1.9 %
Accidental occupational	1096	3.7 %	121 0.4 %
Accidental environmental	17	0.1 %	17 0.06 %
Accidental others	1206	4.1 %	92 0.3 %
Total accidental	23 064	78.4 %	789 2.7 %
Intentional suicide	3470	11.8 %	73 0.2 %
Intentional abuse	572	1.9 %	106 0.4 %
Intentional criminal	125	0.4 %	20 0.07 %
Intentional others	462	1.6 %	151 0.5 %
Total intentional	4 629	15.7 %	350 1.2 %
Total accidental and intentional	27 693	94.1 %	1139 3.9 %
Total acute and chronic	28 832	98.0 %	
Adverse drug reactions	262	0.9 %	
Unclassifiable/others	341	1.2 %	
Total	29 435	100 %	

Agents involved

For analysis, the agents and toxins were split into twelve groups. Table 4 shows these different groups and how often they were involved in the total of 29435 poisonings in humans.

Most toxic exposures occurred with pharmaceuticals (36.1 %), followed by household products (27.1 %) and plants (8.0 %). Details of the individual agent groups are available in a supplement to this Annual Report which can be ordered separately on www.toxi.ch.

Severity of poisonings

9206 enquiries from physicians (97.6 % of all medical calls) were concerned with cases of expected or already established poisoning. In these cases, the treating physicians received a written follow-up of the telephone consultation, together with a request for feedback on the clinical outcome. The STIC received a report on the outcome in 75.4 % of these cases. Thus the STIC received additional information, provided by the attending physicians, concerning symptoms, clinical outcome and treatment of acute and chronic poisonings which was entered and analysed in our in-house information system.

Table 4
Agents involved in all cases of poisonings in humans

Agents/Age groups	Adults	Children	Age unknown		Total
Pharmaceuticals	5721	4910	6	10637	36.1 %
Household products	2591	5374	3	7968	27.1 %
Plants	573	1789	2	2364	8.0 %
Technical and industrial products	1474	389	2	1865	6.3 %
Cosmetics and personal care products	309	1532	–	1841	6.3 %
Food and beverages	687	483	2	1172	4.0 %
Recreational drugs, alcohol	591	391	1	983	3.3 %
Agricultural and horticultural products	424	328	3	755	2.6 %
Mushrooms	281	152	–	433	1.5 %
Venomous animals	239	116	1	356	1.2 %
Veterinary drugs	53	35	–	88	0.3 %
Others or unknown agents	732	238	3	973	3.3 %
Total	13675	15737	23	29435	100 %

Data capture and data evaluation was standardised according to circumstances, causality and severity of poisoning. This annual report only includes poisonings where the causality was confirmed or likely. Confirmed means the toxin has been found in the body, the time course and symptoms are compatible with the toxin, and the symptoms could not be explained by an underlying illness or any other cause. Likely causality fulfils the same criteria, except that the agent has not been detected in the body.

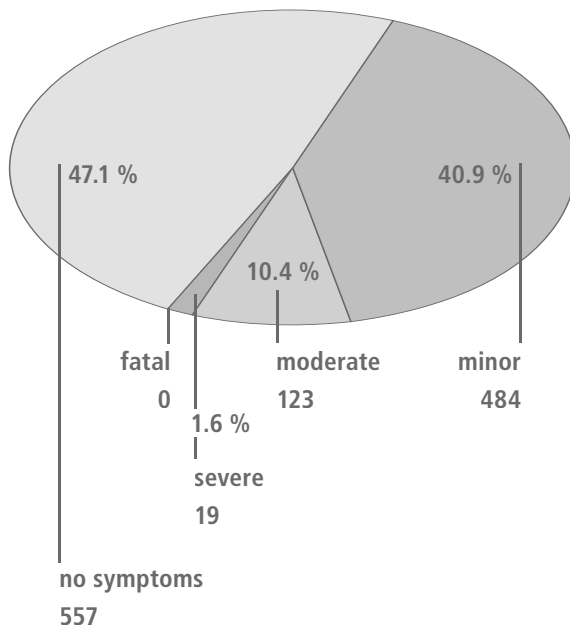
4887 human cases both asymptomatic and symptomatic with sufficient evidence of causality were analysed further with regard to clinical course (–5.4 %).

1183 cases involved children and 3704 adults. The severity of these cases is documented in Figure 3 with cases categorised as follows: no symptoms, minor, moderate, severe, or fatal. Minor symptoms generally require no treatment; moderate symptoms usually require treatment, and cases with severe symptoms must always be treated.

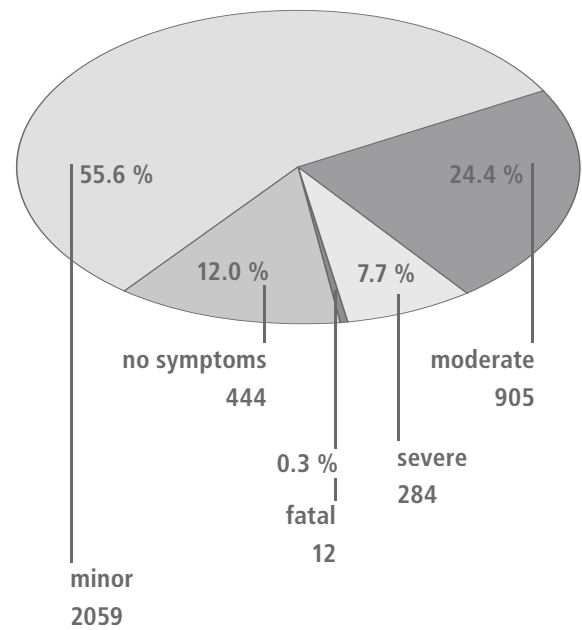


Figure 3
Clinical outcome of poisoning cases in children and adults

Children (n = 1183)



Adults (n = 3704)



Amongst children, almost half of the cases (557 = 47.1 %) were asymptomatic in contrast to adults where only 444 (12.0 %) were asymptomatic. Minor symptoms were observed in 484 children (40.9 %) and in 2059 adults (55.6 %). Moderate symptoms were seen in 123 children (10.4 %) and 905 adults (24.4 %). Severe poisonings occurred in 19 children (1.6 %) and 284 adults (7.7 %). There were 12 fatal cases in adults (0.3 %).

Of the 4887 cases where causality was confirmed or likely (Table 5), about three fifths involved an ingestion of only one toxin. In two fifths of the cases, two or more agents were involved. For the purpose of this report, these cases have been classified according to the most important agent involved. In those cases where follow-up information was received and analysed, pharmaceuticals were again the most frequent cause of poisoning (62.8 %), followed by household products (10.9 %) and technical and industrial products (8.2 %).

Table 5
Frequency of agent group and severity of human poisoning in cases where medical feedback was received and analysed

Agent groups Severity of poisoning	Adults					Children					Total	
	N	Mi	Mo	S	F	N	Mi	Mo	S	F		
Pharmaceuticals	317	1362	561	212	7	313	216	73	8	–	3069	62.8 %
Household products	28	166	31	10	–	135	140	18	4	–	532	10.9 %
Technical and industrial products	33	230	75	11	–	16	27	9	–	–	401	8.2 %
Recreational drugs, alcohol	19	127	145	38	1	12	20	5	2	–	369	7.6 %
Plants	10	32	18	2	–	17	23	2	1	–	105	2.1 %
Mushrooms	4	28	30	3	–	17	2	4	–	–	88	1.8 %
Cosmetics and personal care products	8	17	6	1	–	21	25	7	1	–	86	1.8 %
Venomous animals	2	21	11	2	–	1	10	1	3	–	51	1.0 %
Agricultural and horticultural products	5	16	5	1	4	8	4	1	–	–	44	0.9 %
Food and beverages	2	15	5	–	–	4	4	1	–	–	31	0.6 %
Veterinary drugs	4	3	–	–	–	–	1	–	–	–	8	0.2 %
Others or unknown agents	12	42	18	4	–	13	12	2	–	–	103	2.1 %
Total	444	2059	905	284	12	557	484	123	19	–	4887	100 %

Severity of poisoning: N = no symptoms, Mi = minor, Mo = moderate, S = severe, F = fatal



Animal poisoning

Animals involved

1597 enquiries concerned a large variety of animal species: 1074 dogs, 385 cats, 62 equines (horses, ponies and donkeys), 20 bovines (calves, cows, cattle, sheep and goats), 27 rodents (hares/rabbits, rats, hamsters, chipmunks), 5 guinea pigs, 12 birds (chicken, parrots, budgerigars, eagles), 4 reptiles (lizards, tortoises, and others), 2 roe deers, 2 tigers, 1 pig, 1 hedgehog, 1 lama and 1 kangaroo.

Agents involved

Table 6 shows the number of calls for the twelve different groups of agents.

Table 6

Agents involved in intoxications concerning animals

Agents groups	No. of Cases	
Plants	321	20.9 %
Human pharmaceuticals	308	20.1 %
Agricultural and horticultural products	273	17.8 %
Household products	178	11.6 %
Food and beverages	165	10.8 %
Veterinary drugs	110	7.2 %
Recreational drugs, alcohol	32	2.1 %
Technical and industrial products	28	1.8 %
Venomous animals	21	1.4 %
Cosmetics and personal care products	22	1.4 %
Mushrooms	11	0.7 %
Others or unknown agents	64	4.2 %
Total	1533	100 %

The calls primarily concerned plants (20.9 %), followed with decreasing frequency by calls relating to pharmaceuticals (20.1 %), agricultural and horticultural products (17.8 %), household products (11.6 %), food and beverages (10.8 %) as well as veterinary drugs (7.2 %).

Severity of poisonings

Veterinarians were also requested to submit clinical reports on animal poisoning. We received a total of 297 reports which could be analysed. Of those 161 cases remained without symptoms, 67 were classified as minor and 69 cases had moderate, severe or fatal outcomes (Table 7).

Table 7

Agent groups and severity of animal poisoning

Agent groups Severity of poisoning	N	Mi	Mo	S	Outcome		Total
					F		
Pharmaceuticals	50	20	10	2	1	83	27.9 %
Veterinary products	19	7	7	11	1	45	15.2 %
Agricultural and horticultural products	29	7	3	4	1	44	14.8 %
Plants	17	11	11	5	–	44	14.8 %
Food and beverages	27	9	4	–	–	40	13.5 %
Household products	15	5	1	–	–	21	7.1 %
Venomous animals	2	2	1	1	2	8	2.7 %
Recreational drugs, alcohol	1	5	1	–	–	7	2.4 %
Technical and industrial products	–	1	1	–	1	3	1.0 %
Cosmetics and personal care products	–	–	–	–	–	–	0.0 %
Mushrooms	–	–	–	–	–	–	0.0 %
Others or unknown agents	1	–	1	–	–	2	0.7 %
Total	161	67	40	23	6	297	100 %

Severity of poisoning: N = no symptoms, Mi = minor, Mo = moderate, S = severe, F = fatal



Other activities

Services

The STIC was contacted to provide principally the following services:

1. Compilation of expert reports paying particular attention to unpublished experience of the STIC;
2. Toxin-based anonymised case reports for the pharmaceutical and chemical industry;
3. Handling medical emergency advice for Swiss products abroad (utilising safety data sheets and transport documentation) while having detailed product information available;
4. Provision of medical emergency advice outside office hours for the pharmaceutical and chemical industry including un-blinding in randomized clinical trials;
5. Distribution of printed materials, in particular 11 390 pamphlets.

The website was visited 164654 times (previous year 151 481).

Senior medical staff regularly carries out clinical toxicological consultations at the Department of Internal Medicine of the University Hospital Zurich (mostly on emergency and intensive care wards).

Teaching and continuing education

The STIC continues its collaboration with the Division of Clinical Pharmacology and Toxicology at the University Hospital Zurich headed by Prof. Gerd Kullak-Ublick. Academic staff of the STIC continues to participate regularly and actively in the joint continuing education activities in clinical pharmacology and toxicology.

H. Kupferschmidt and A. Ceschi contribute to the training of medical students as lecturers on the subject of special clinical toxicology (1st year Master studies: module emergency medicine) and to the Universities of Basel and Geneva's courses MSc in Toxicology and MAS in Toxicology. Permanent academic staff regularly give presentations in clinical toxicology for

the postgraduate and continuing education of physicians and other members of the medical profession and professional organisations. Of particular note is the all-day seminar for paramedics offered twice a year in collaboration with the Zurich Emergency Services.

Six papers were presented at the annual congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) in Copenhagen. Two papers were presented at the North American Congress of Clinical Toxicology (NACCT) in Atlanta, three at the Annual Congress of the European Association of Clinical Pharmacology and Therapeutics (EACPT), and one at the Annual Meeting of the Swiss Society of General Internal Medicine (SGIM). In addition, one paper was presented at the specialist meeting of the Society for Clinical Toxicology (GfKT) in Strasbourg.

Research projects

The main focus of the STIC's research efforts in the **scientific services** is the epidemiology and toxicology as well as the dose-effect relationships in human poisonings, in particular relating to drug overdose. Four dissertations were in progress. The STIC has research collaborations with other universities in Bern, Basel, Denver and Boston. The STIC also contributes to a project entitled «Plant Food Supplements: Levels of Intake, Benefit and Risk Assessment (PlantLIBRA)» which is being financed by the 7th framework programme of the European Union (FP7) (www.plantlibra.eu).

Collaborations

Universities: Apart from collaborating with the Division of Clinical Pharmacology and Toxicology at the University Hospital Zurich, the STIC is a member of the Center for Xenobiotic Risk Research of the University of Zurich (XeRR). This collaboration increases staff competence in general and special toxicological questions and offers the opportunity to pass enquiries on to other specialists within this centre of excellence. Poisonings in animals were handled in part jointly

with the Institute for Veterinary Pharmacology and Toxicology of the University in Zurich. A veterinarian from this Institute, Dr. med. vet. J. Kupper, works part-time at the STIC and is responsible for the areas of plant toxicology and poisonings in animals.

Authorities: It is the state's responsibility to protect its population from exposure to dangerous chemicals. By systematically gathering and evaluating incident data, necessary measures can quickly be taken to limit any potential damage and to recommend amendments to existing legislation to avoid such incidents in future. The new chemicals law has abolished comprehensive authorisation and registration of all compounds and preparations. Correspondingly, new ways had to be found to ensure protection of the population's health, and the STIC will be taking on parts of these. This involves in particular the availability of a Poison Centre for exposures with chemicals and compounds covered by this law. The Federal Office of Public Health (FOPH) benefits from the competence and 24-hour service of the STIC, and the STIC in exchange has constant access to the confidential data in the Federal Office of Public Health's product database Indatox Plus. The STIC is also involved in the federal information campaign for the GHS (Globally Harmonized System).

H. Kupferschmidt is a member of the Foundation Council of the Swiss Centre for Applied Human Toxicology (SCAHT) funded by the Swiss government. The STIC is collaborating with the Federal Office for Statistics to investigate poisoning mortality.

The Swiss Agency for Therapeutic Products (**Swissmedic**) has contracted the STIC to ensure toxicovigilance for pharmaceuticals. This helps Swissmedic in the early detection, risk assessment, handling and prevention of poisoning with animal and human medicines. The STIC notifies Swissmedic of new or unusual toxicity and prepares a quarterly analysis on poisoning with pharmaceuticals as well as abuse of drugs and medicines. The STIC thus plays an important role in ensuring drug safety in the areas of overdose and misuse. The STIC collates information on adverse drug effects as part of the national pharmaco-

vigilance network under the technical leadership of the Division of Clinical Pharmacology and Toxicology at the Zurich University Hospital.

International: The STIC collaborates closely with partner poison centres abroad and gains access to other networks. It is represented in working groups and in the executive committee of the Society of Clinical Toxicology (GfKT) representing German-speaking poison centres. The STIC is also involved in the European Association of Poison Centres and Clinical Toxicologists (EAPCCT). H. Kupferschmidt has been the association's webmaster for several years (www.eapcct.org).



■ The Swiss Antidote Network

Distribution and storage of antidotes in Switzerland is uniformly regulated by order of the Swiss conference of the cantonal directors of public health (CDS). Information on the individual antidotes and their availability is published annually in the Swiss List of Antidotes. The Swiss List of Antidotes is organized in basic and additional ranges which complement each other based on the frequency of poisonings, on the location where an antidote is needed, and its availability. In general antidotes are only included in the list if they do not belong to the standard range available at pharmacies in the community and in hospitals. The inclusion criteria stipulate that:

1. the substance is used as a classic antidote;
2. the substance used as an antidote is not commonly available in hospitals;
3. the quantity of the drug if administered as an antidote exceeds the quantity that is usually available in hospitals for therapeutic use;
4. the use of the drug as an antidote is not well known.

The Swiss List of Antidotes does not aim to be fully comprehensive, but wants to ensure the safe and rapid availability of the selected substances.

News 2014: No new antidote list was published in 2014. Using insulin/glucose to treat cardiotoxic substance poisonings has become established and giving lipid emulsion to treat severe lipophilic agent poisonings has been widened to more agents. There have been problems with the availability of several antidotes in the last months (atropine 100 ml; 4-DMAP, phentolamine). The supply of antidotes for decontamination hospitals, which has been defined by the representative of the Federal Council for the co-ordinated sanitary services (KSD) and became compulsory in 2013, has been gradually delivered to those hospitals in 2013/2014.

Availability of antidotes: More than half of the preparations on the antidote list are not licensed in Switzerland. In order to provide a clear legal framework for the procurement and storage of these antidotes, Swissmedic developed so-called instructions in collaboration with the Swiss Toxicological Information Centre on simplified registration for important and rarely used antidotes which became effective on 1 March 2010 (corresponding instructions for the use of antivenins to treat poisonous animal bites were implemented during 2011). By the middle of 2013 two products had been registered using this simplified registration process. Swissmedic has simplified registration requirements for these products in order to guarantee their economic supply in Switzerland at any time. The application for registration is based on complete quality documentation. The lack of preclinical and clinical study results is compensated by intensive monitoring of their use in poisoning incidents (to be notified using the form «Notification of a suspected adverse effect through antidote or antivenin»).

Table 8

The categories of antidotes on the Swiss Antidote List**Basic supply available at pharmacies in the community:**

activated charcoal, biperidene (tablets), simeticone (drops or tablets).

Basic supply available at hospital pharmacies:

amyl nitrite, atropine (1 ml), biperidene (ampoules), calcium glubionate (ampoules), calcium gluconate (hydrogel), colestyramine, dantrolene, ethanol, flumazenil, glucagon, insulin, lipid emulsion, magnesium, N-acetylcysteine, naloxone, sodium bicarbonate, sodium polystyrene sulfonate, phyto-menadione (vit. K), pyridoxine (vit. B₆).

Additionally available at regional centres:

atropine (100 ml), calcium-disodium-EDTA, desferrioxamine, dexrazoxane, digitalis antidote, dimethylaminophenol (4-DMAP), dimercaptopropane sulfonate (DMPS, Unithiol), dimercaptosuccinic acid (DMSA, Succimer), iron-(III)-hexacyanoferrate(II) (Prussian blue), fomepizole, hydroxycobalamin, methylene blue, octreotide, obidoxime, phentolamine, physostigmine salicylate, silibinin, sodium thiosulfate.

Regional centres and their telephone numbers are included in the list.

Special supplies: The availability of antivenins for venomous snake bites can be seen on the list of the Swiss Antivenin Depot Network ANTIVENIN-CH (www.antivenin.ch).

The STIC can arrange access to antidotes held by the armed forces pharmacy (including botulinum and diphtheria antitoxins).

An antidote assortment is available at decontamination hospitals (for mass poisonings).

Antidotes for radionuclides are held in stock by the cantonal pharmacy in Zurich.

The assortment for emergency services includes antidotes which have to be administered as early as possible, prior to arrival at the hospital.

The Swiss Antivenin Depot Network ANTIVENIN-CH comprises the pharmacies of the University hospitals in Berne (Insel-spital), Geneva, Lausanne and Zurich, the cantonal hospitals in Chur and Münsterlingen, and the Ospedale San Giovanni in Bellinzona, and the Institut Central de l'Hôpital du Valais in Sion.

The Swiss List of Antidotes is updated annually by a special working group of the STIC and the Swiss Association of Hospital Pharmacists. It is published in the Bulletin of the Swiss Federal Office of Public Health and can also be viewed on the Internet at «www.antidota.ch» or at «www.pharmavista.net».

Members of the working group are L. Cingria (Geneva), C. Fäh (Winterthur), D. Heer (Ittigen), Th. Meister (Ittigen), Ch. Rauber-Lüthy (Zurich), F. Widmer (Zurich) and H. Kupferschmidt (Chairman, Zurich).



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Advanced Hazmat Life Support: Kurs zum medizinischen Management von ABC-exponierten Personen.

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The publications listed above may be ordered via telephone (+41 44 251 66 66), fax (+41 44 252 88 33), or by e-mail to info@toxi.ch. Some of these publications can be downloaded from our website www.toxi.ch.

In addition, the revised leaflet about first aid and poisoning prevention is available as well as emergency telephone number stickers in German, French and Italian. Dissertations are only available on loan.

Income and expenditure

Income Fr. 3 252 899.–

scienceindustries

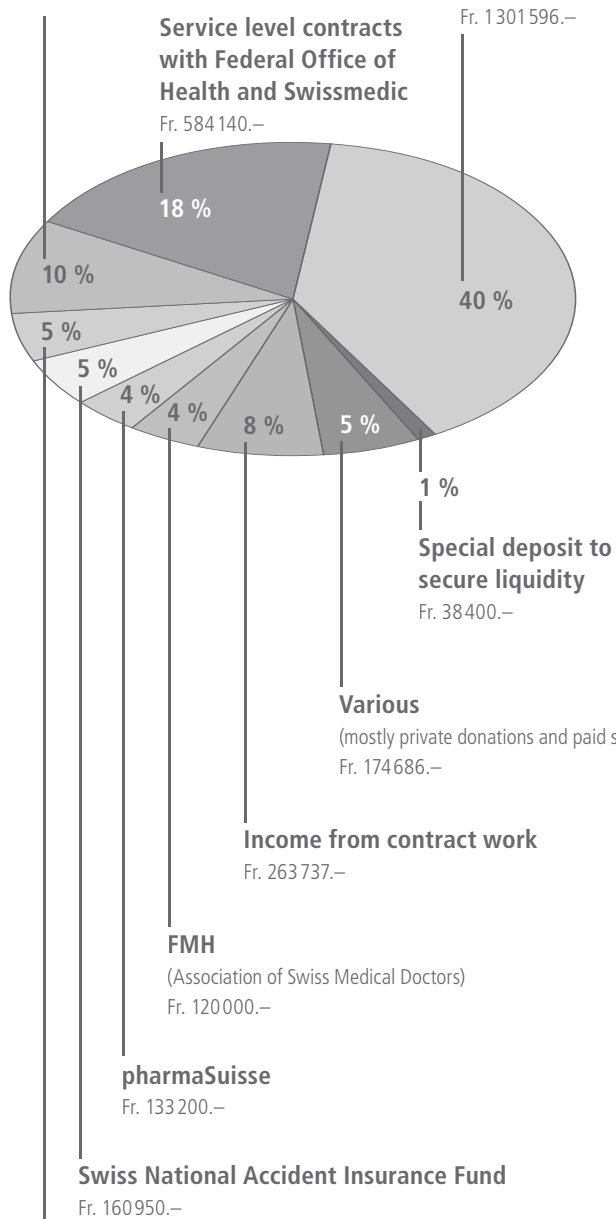
(trade association of chemical, pharmaceutical and biotechnology companies)
Fr. 315 240.–

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Cantons

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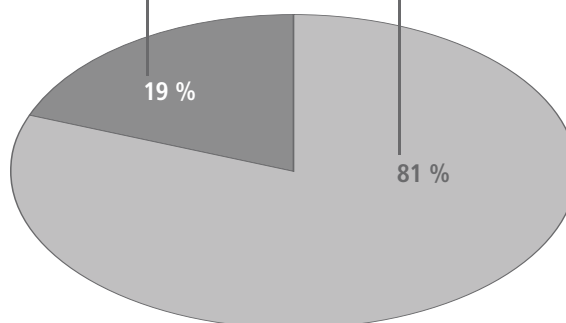
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- santésuisse (SAS)
- the Association of Swiss Medical Doctors (FMH).

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