



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

■ Annual Report 2012

www.toxi.ch

Associated Institute of the University of Zurich

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■ Editorial

Dear Readers,

24 hours a day, 365 days per year

The Swiss population can count on the assistance of the TOX!

Once again a significantly higher number of callers dialled 145 in 2012 compared to previous years. 36 837 enquiries were registered at the TOX: more than half of them came from concerned parents whose children had ingested substances or poisonous berries whilst playing; other calls came from companies whose employees came into contact with toxic substances or from physicians, pharmacists and veterinarians asking for advice in poisoning cases. Everybody who required information related to toxic substances was helped, both in acute and in chronic exposure situations.

During the last few years, enquiries from hospitals and clinics have become increasingly important: frequently, several substances or pharmaceuticals are involved in these often dramatic, acute and complex cases. Such calls require the highest standard of professional knowledge and are usually time- and labour-intensive.

The poisons information specialists are available on the phone day and night for humans and animals alike – free of charge to the caller, although the help and advice given is priceless and can even save lives! It is reassuring to know that fast and knowledgeable advice is available in emergency situations.

The international exchange with partner organisations is maintained and the TOX enjoys an excellent reputation both at home and abroad. The enormous amount of data and information gathered in the course of so many poisoning enquiries results in an impressive number of scientific publications.

Our goal: to maintain the highest quality of service and to sustain the trust of the public, supporting bodies and contractual partners

To achieve this goal technical competency on its own will not suffice: the excellent working environment and the low staff turnover at the TOX are equally important preconditions for motivation and achievements. Every single employee of the TOX faces challenging tasks; their work load and the responsibility they bear are great.

The Foundation TOX – unique in Europe is the only poisons information service funded by the solidarity of its supporting members

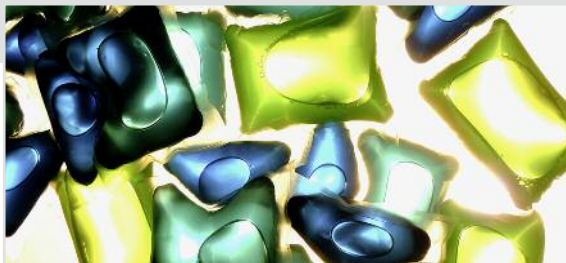
This institution has been financed for nearly 50 years through the solidarity of its supporting institutions consisting of nearly all partners in the health service as well as the Swiss Confederation and the cantons. The increasing number of cases and the time-consuming advice given in complex cases coming mostly from hospitals and clinics require an ever increasing workload and generate higher running costs. The pleasing financial result for the year 2012 should not give rise to too much optimism: the long-term financial support of the Foundation is by no means secure.

I observe the development of the TOX with great pleasure and with pride! It shows yet again that the institution serves a real need of the population. That is why it is so dear to my heart and to the Foundation Council to provide the best conditions for the TOX to be able to continue its excellent services!

A very big thank you to the Director and all members of staff for their valuable performance and hard work for the TOX!

Elisabeth Andereg-Wirth
President
of the Foundation Council





Introduction

The annual report for the year 2012 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 2012 36 837 consultations were carried out by the STIC. Thus we saw a further rise in the number of consultations in the reporting year (+3.54 % vs. 2011 and +8.3 % in the past three years). As in previous years theoretical (preventive) enquiries decreased further (–2.0 %), the increase in consultations following exposures is therefore all the more evident (+4.0 %). The decrease in theoretical enquiries is easily explained by the fact that the general public as well as experts increasingly access information via the internet, especially in non-urgent cases. On the other hand it is evident that the personal advice given over the phone in case of an exposure is 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.

In 2012 the number of consultations for accidental poisonings increased once again (+3.6 %), as did the consultations relating to intentional poisonings in contrast to the trend of the previous years (+7.3 %). The number of multiple consultations per case has remained unchanged since last year at 6.2 % for accidental intoxications and 15.9 % for intentional poisonings reflecting the higher complexity of the latter. There has been a significant increase in consultations with regard to poisonings in animals (+6.8 %).

The number of moderate and severe poisonings decreased slightly compared to the previous year (1 292 vs. 1 320, –2.1%), especially in children (–6.0 %; –1.7 % in adults). The STIC recorded 10 fatal poisonings in humans in the reporting year, which corresponds to the average of previous years. In animals, 5 fatal cases were recorded. Pharmaceuticals, drugs of abuse as well as poisonous gases caused the fatal poisonings in humans. The pharmaceuticals involved were clomethiazole, colchicine, paracetamol, allopurinol, mefenamic acid, melitracen/flupentixol, metoprolol, metformin, amlodipine, methadone, quetiapine, alprazolam, pipamperone, methotrexate, venlafaxin, topiramate, nortriptyline. The 3 non-pharmaceutical fatal poisonings were caused by cocaine, smoke, and carbon monoxide.

There is an increasing need to combine case data from poison information centres internationally in joint projects, as supranational problems gain in significance for authorities and industry alike. This increases the pressure to harmonise data collection and analysis. The STIC contributes to international projects within the European Union (www.hpa.org.uk/ASHTII) and within the German-speaking poisons information centres (www.klinitox.de). The STIC is developing its database and data collection towards international compatibility. Furthermore the individual components of the database (ToxiNova) have been better integrated and combined into a single system which has significantly improved the fast and easy access to data on cases, products, agents, scientific literature, as well as addresses and documents related to commercial contracts.

The scientific work at the STIC continues to develop in a very pleasing way; publications resulting from completed projects can be found in the list of publications included in this annual report.

Focus

Enquiries to the STIC relating to **detergent pods** (also known as Megacaps, Liquitabs or Gel Caps) have been increasing significantly since the beginning of 2012: 33 enquiries relating to exposure in the whole of 2012; and already 23 enquiries until end of May 2013. We had, however, already observed a transient increase in the number of exposures to these products from 2002 to 2004. Such products appear to be very attractive to children; out of a total of 106 enquiries received, 103 related to children (plus 2 adults and 1 dog). 96 of the children had swallowed the product; in 7 cases there was contact with the eyes. All children were younger than 6 years old. We have follow-up data for 22 of the children. Five remained asymptomatic, 12 suffered minor symptoms like vomiting, cough or irritation of the eyes. Five showed moderate symptoms with repeated vomiting or a more pronounced irritation of the eyes. Severe symptoms were not observed. An increase in poisoning incidents involving children and detergent pods has also been reported elsewhere. More children developed symptoms after exposures to detergent pods than to traditional washing detergents (80 % vs. 63 %). Cases with CNS depression or severe irritation of the gastrointestinal tract have been reported. In case of eye contact, corneal injuries have been observed which, after symptomatic treatment, healed without lasting damage.

For emergency self-treatment of severe allergic reactions **adrenalin auto-injectors** are being used which can prove life-saving. Using these auto-injectors, however, is not that simple and erroneous application into the finger may occur. From 1998 to 2012 the STIC was contacted 152 times because of such incidents concerning (124 adults and 38 children). 107 accidents occurred in lay people, 44 were accidents at work concerning medical personnel. Follow-up reports provided by the treating physicians are available in 53 cases: one patient remained asymptomatic, 37 patients developed mild symptoms such as pain, pallor, paraesthesia or slowed-down capillary filling. 15 patients experienced pain and a pronounced perfusion disorder. The thumb was most often affected. All patients recovered using localized heat therapy, supported by vasodilators if required. The difficulties

involved with correct administration are shown in a study involving 100 physicians. Even after reading the instructions, self-injection occurred in 16 % of the practical exercises (Mehr S. et al. 2007). It is important to instruct medical personnel, parents and patients in the correct use and to provide regular practical training using a training apparatus to avoid mistaken applications and to increase the chances of survival in a potentially life-threatening anaphylactic shock.

The STIC regularly receives **calls from care homes**. These increased continuously from 130 in 2002 to 304 in 2012. In total 2 281 enquiries were received during this time period. Prophylactic advice was being sought in 312 cases (13.7 %) when cleaning materials, disinfectants or materials for crafts had been ingested. Exposure had occurred in 1,969 of these cases (86.3 %). 987 cases (50 %) concerned pharmaceuticals, followed by household products (17 %) and plants (11 %). 460 of the incidents involving pharmaceuticals were caused by the patients themselves: suppositories, eye drops or disinfectants were swallowed by accident, but deliberate overdose also occurred. In 527 cases erroneous administration through medical personnel was the cause for the call. Most frequently pharmaceuticals or patients were mixed up (365 cases), 84 times the medicine was administered twice by mistake and in 78 cases a different reason was to blame for the mistake (for example wrong dosage or wrong time of administration). It is noticeable that an above average number of cases concerned adolescents and young adults as well as elderly people. Although such cases involve no or only mild symptoms most of the time, the risk of severe incidents still exists. There are active ingredients which can lead to severe symptoms in patients not yet used to the pharmaceutical even when administered in a therapeutic dosage, for example neuroleptics, beta blockers and opioids



Emergency and information service

The main services provided by the STIC are 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 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 calls

Use of the service

In 2012 the information service of the STIC received 36 837 enquiries which represents an increase of 3.54 % compared to the previous year.

Figure 1

Number of enquiries to the STIC over the last ten years

2003	32 217
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

Origin of calls

Table 1 shows the number of calls received in 2012 from the individual cantons of Switzerland and the different population groups.

The largest number of calls came from the general public (64.3 %). 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 Zurich (4.0 per 1 000 inhabitants). The smallest number of calls was received from the cantons of Jura, Ticino and Uri.

Physicians used our service 9,710 (26.4 %) times. Calls made by hospital physicians increased by 436 compared to the year 2011. Calls received from general practitioners also increased (+24). Veterinarians accounted for 776 calls to the STIC. Based on population, the largest proportion of physician calls came from the cantons of Basel Stadt, Zurich and Jura, followed by Bern and Ticino. Pharmacists submitted 550 inquiries to the STIC.

The STIC answered 134 requests for information from the media (newspapers, radio and television). 1 968 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 2012 by cantons and population groups

Canton	Population	General public	Hospital doctors	Practitioners	Veterinarians	Pharmacists	Various	Total	Calls per 1000 inhabitants	
									Public	Physicians
AG	618 298	1 843	559	74	53	55	141	2 725	3.0	1.1
AI	15 743	49	3	7	2	–	1	62	3.1	0.8
AR	53 313	145	41	8	1	–	21	216	2.7	0.9
BE	985 046	3 134	926	204	114	55	269	4 702	3.2	1.3
BL	275 360	825	165	26	29	13	51	1 109	3.0	0.8
BS	186 255	565	370	61	9	27	62	1 094	3.0	2.4
FR	284 668	786	267	23	23	24	44	1 167	2.8	1.1
GE	460 534	991	449	88	17	42	105	1 692	2.2	1.2
GL	39 217	91	27	10	11	2	4	145	2.3	1.2
GR	193 388	439	163	47	12	9	42	712	2.3	1.1
JU	70 542	148	98	9	1	6	10	272	2.1	1.5
LU	381 966	911	335	86	27	12	123	1 494	2.4	1.2
NE	173 183	439	173	17	13	22	43	707	2.5	1.2
NW	41 311	89	21	7	2	1	4	124	2.2	0.7
OW	35 885	138	26	2	2	1	9	178	3.8	0.8
SG	483 156	1 290	400	87	52	31	129	1 989	2.7	1.1
SH	77 139	207	71	17	5	7	18	325	2.7	1.2
SO	256 990	794	157	48	21	10	55	1 085	3.1	0.9
SZ	147 904	348	98	21	2	5	18	492	2.4	0.8
TG	251 973	683	220	48	35	6	46	1 038	2.7	1.2
TI	336 943	476	380	39	15	17	19	946	1.4	1.3
UR	35 382	64	18	1	3	1	2	89	1.8	0.6
VD	725 944	1 841	689	106	75	64	151	2 926	2.5	1.2
VS	317 022	722	192	43	21	30	60	1 068	2.3	0.8
ZG	115 104	317	86	20	15	3	24	465	2.8	1.1
ZH	1 392 396	5 622	1 679	320	173	95	588	8 477	4.0	1.6
FL	36 475	74	7	6	5	2	8	102	2.0	0.5
Foreign	–	232	650	10	38	9	32	971	–	–
Unknown	–	436	–	5	–	1	23	465	–	–
Total	7 991 137	23 699	8 270	1 440	776	550	2 102	36 837	3.0	1.3
%	–	64.3	22.5	3.9	2.1	1.5	5.7	100	–	–

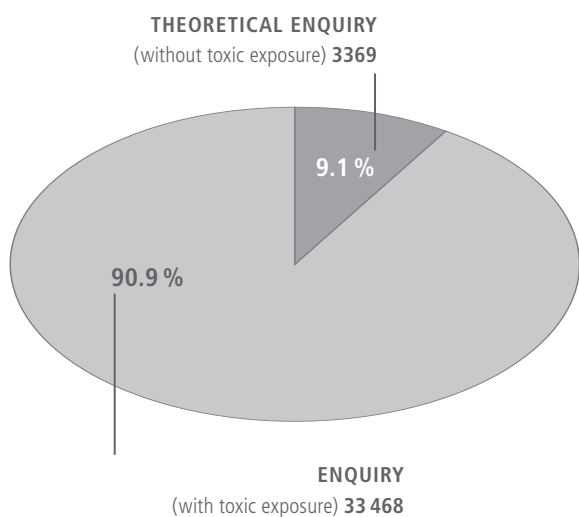


Types of calls

Calls can be sub-divided into enquiries without exposure and enquiries where exposure has taken place.

Figure 2

Types of calls (n = 36 837)



Among the 3 369 calls (compared to 3 439 in the previous year, -2.04%) without toxic exposure, frequent questions concerned drugs and antidotes, toxicity of plants to children and pets, and the risk of poisoning from spoiled food, household products and chemicals, with the recommendations given by the STIC being predominantly of a preventive nature. This sub-category also includes advice and preparing reports for authorities, media, private individuals and various organizations as well as distribution of fact sheets and referring enquiries to appropriate experts.

The 33 468 enquiries following toxic exposure concerned 31 844 humans (compared to 30 616, $+4.0\%$ in the previous year), and 1 624 animals (compared to 1 521, $+6.77\%$). 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 (29 498). Children were involved in 54.1% of the cases, adults in 45.8%. In 27 cases (0.1%), the age group remained unknown.

The highest number of cases involved children below five years of age (45.1%). Boys were more frequently represented amongst the children (51.8% vs. 47.1%) and women amongst the adults (57.8% vs. 41.9%).

Table 2
Age and gender of human cases with toxic exposure

	Age	female	male	unknown	Total		
Children		7 517	47.1 %	8 268	51.8 %	162	15 947
Age	< 5 years	6 250	83.1 %	6 970	84.3 %	90	13 310
	5 – < 10 years	585	7.8 %	722	8.7 %	17	1 324
	10 – < 16 years	537	7.1 %	399	4.8 %	2	938
	unknown	145	1.9 %	177	2.1 %	53	375
Adults		7 818	57.8 %	5 664	41.9 %	42	13 524
Age	16 – < 20 years	552	7.1 %	318	5.6 %	–	870
	20 – < 40 years	1 744	22.3 %	1 412	24.9 %	2	3 158
	40 – < 65 years	1 391	17.8 %	1 121	19.8 %	–	2 512
	65 – < 80 years	320	4.1 %	222	3.9 %	–	542
	80+ years	193	2.5 %	121	2.1 %	–	314
	unknown	3 618	46.3 %	2 470	43.6 %	40	6 128
Unknown		7	25.9 %	7	25.9 %	13	27
Total		15 342	52.0 %	13 939	47.3 %	217	29 498

Circumstances of poisoning

Table 3 shows the circumstances of poisoning in the 29 498 cases with toxic exposure. **Acute accidental intoxications** (22 902 compared to 22 208, +3.13 % in the previous year) 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 (1 095).

Acute intentional poisoning was mostly due to attempted suicide (3 674 cases, compared to 3 301, +11.3 % in the previous year), less frequently due to drug abuse (546 cases); poisoning incidents involving a third party (“criminal poisonings”) were rare (112, previous year 101).

Chronic poisoning was relatively rare (1 019 cases) compared to acute intoxications. **Adverse drug reactions** in therapeutic doses led to 252 information requests. These were mainly related to the establishment of a causal link between the observed symptoms and the medication taken.

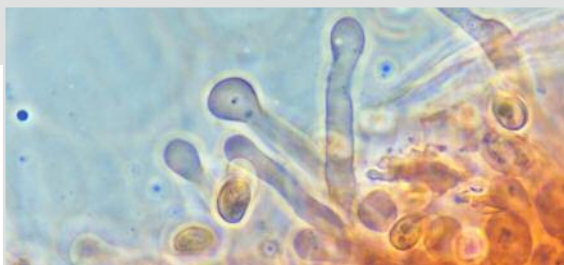


Table 3
Circumstances of toxic exposures

Circumstances of toxic exposures		Acute poisoning (Exposure < 8h)		Chronic poisoning (Exposure > 8h)
Accidental domestic	20 709	70.2 %	489	1.7 %
Accidental occupational	1 095	3.7 %	91	0.3 %
Accidental environmental	16	0.1 %	16	0.05 %
Accidental others	1 082	3.7 %	85	0.3 %
Total accidental	22 902	77.6 %	681	2.3 %
Intentional suicide	3 674	12.5 %	49	0.2 %
Intentional abuse	546	1.9 %	91	0.3 %
Intentional criminal	112	0.4 %	23	0.08 %
Intentional others	656	2.2 %	175	0.6 %
Total intentional	4 988	16.9 %	338	1.1 %
Total accidental and intentional	27 890	94.5 %	1 019	3.5 %
Total acute and chronic		28 909	98.0 %	
Adverse drug reactions		252	0.9 %	
Unclassifiable/others		337	1.1 %	
Total		29 498	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 29 498 poisonings in humans.

Most toxic exposures occurred with pharmaceuticals (36.1 %), followed by household products (27.0 %) and plants (8.3 %). 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

9 438 enquiries from physicians (97.2 % 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 74.1 % 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/Agent groups	Adults	Children	Age unknown		Total
Pharmaceuticals	5 805	4 835	10	10 650	36.1%
Household products	2 483	5 482	3	7 968	27.0%
Plants	487	1 969	1	2 457	8.3%
Technical and industrial products	1 471	359	2	1 832	6.2%
Cosmetics and personal care products	254	1 408	–	1 662	5.6%
Food and beverages	702	487	2	1 191	4.0%
Recreational drugs, alcohol	648	391	3	1 042	3.5%
Agricultural and horticultural products	412	368	–	780	2.6%
Mushrooms	309	220	1	530	1.8%
Venomous animals	218	97	2	317	1.1%
Veterinary drugs	49	50	–	99	0.3%
Others or unknown agents	686	281	3	970	3.3%
Total	13 524	15 947	27	29 498	100%

Data capture and data evaluation were 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.

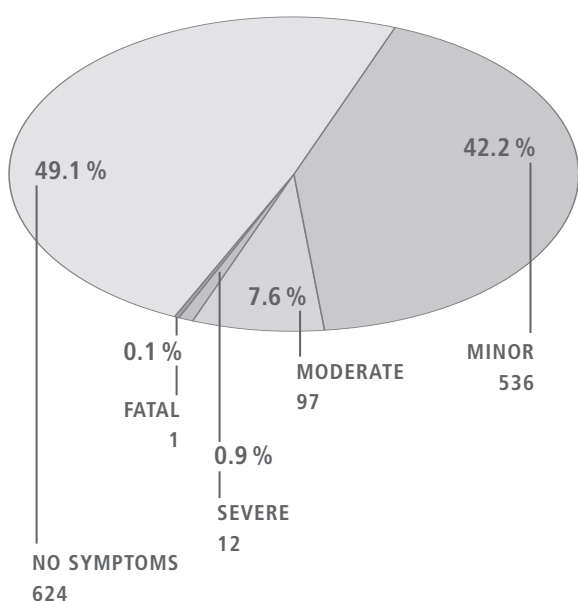
5 165 human cases both asymptomatic and symptomatic with sufficient evidence of causality were analysed further with regard to clinical course (+6.5 %).

1 270 cases involved children and 3 895 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.

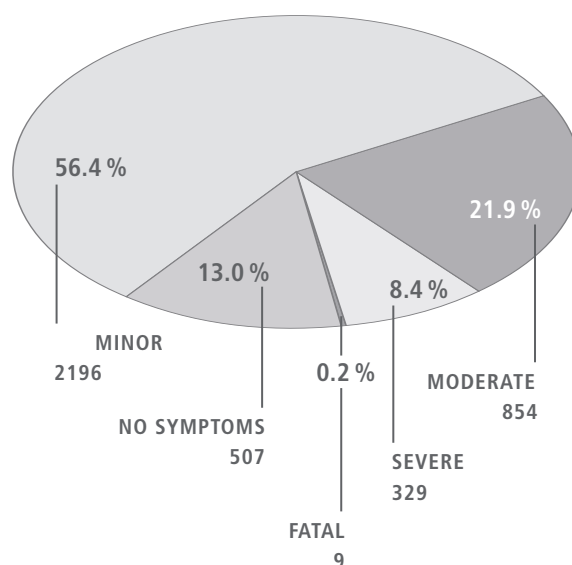


Figure 3
Clinical outcome of poisoning cases in children and adults

Children (n = 1270)



Adults (n = 3895)



Amongst children, almost half of the cases (624 = 49.1%) were asymptomatic in contrast to adults where only 507 (13.0%) were asymptomatic. Minor symptoms were observed in 536 children (42.2%) and in 2 196 adults (56.4%). Moderate symptoms were seen in 97 children (7.6%) and 854 adults (21.9%). Severe poisoning occurred in 12 children (0.9%) and 329 adults (8.4%). In children one poisoning proved fatal (0.1%); there were 9 fatal cases in adults (0.2%).

Of the 5 165 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 (61.1%), followed by household products (10.8%) and technical and industrial products (9.1%).

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	378	1403	498	233	7	347	239	48	5	–	3 158	61.1 %
Household products	38	181	36	5	–	130	153	17	–	–	560	10.8 %
Technical and industrial products	35	292	68	16	–	18	31	8	4	–	472	9.1 %
Recreational drugs, alcohol	17	112	165	54	1	26	16	5	1	–	397	7.7 %
Mushrooms	5	32	29	3	–	30	12	2	–	–	113	2.2 %
Plants	5	20	14	6	–	23	23	6	–	–	97	1.9 %
Cosmetics and personal care products	9	24	3	1	–	13	31	3	–	–	84	1.6 %
Agricultural and horticultural products	2	29	9	3	–	13	3	1	–	–	60	1.2 %
Venomous animals	3	15	9	5	–	1	3	3	1	–	40	0.8 %
Food and beverages	4	14	4	–	–	6	7	–	1	–	36	0.7 %
Veterinary drugs	–	9	–	–	–	4	1	–	–	–	14	0.3 %
Others or unknown agents	11	65	19	3	1	13	17	4	–	1	134	2.6 %
Total	507	2 196	854	329	9	624	536	97	12	1	5 165	100 %

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



Animal poisoning

Animals species

1 624 enquiries concerned a large variety of animal species: 1 087 dogs, 363 cats, 59 equine animals (horses, ponies and donkeys), 18 bovines (calves, cows, cattle, sheep and goats), 28 rodents (hares/rabbits, rats, chinchillas, degus), 6 guinea pigs, 6 birds (chicken, canaries), 3 reptiles (turtles and others), 1 pig, 2 hedgehogs, 1 deer, 1 dormouse, 1 ferret, 1 alpaca, 1 llama and 1 gorilla. The other cases related to several or unknown animal species.

Agents involved

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

Table 6

Agents involved in intoxications concerning animals

Agent groups	No. of cases	
Agricultural and horticultural products	316	20.0 %
Human pharmaceuticals	310	19.6 %
Plants	297	18.8 %
Household products	200	12.7 %
Food and beverages	162	10.3 %
Veterinary drugs	117	7.4 %
Technical and industrial products	41	2.6 %
Recreational drugs, alcohol	22	1.4 %
Venomous animals	19	1.2 %
Cosmetics and personal care products	16	1.0 %
Mushrooms	14	0.9 %
Others or unknown agents	65	4.1 %
Total	1 579	100 %

The calls primarily concerned agricultural and horticultural products (20.0%), followed with decreasing frequency by calls relating to pharmaceuticals (19.6%), plants (18.8%), household products (12.7%), food and beverages (10.3%) as well as veterinary drugs (7.4%).

Severity of poisonings

Veterinarians were also requested to submit clinical reports on animal poisoning. We received a total of 368 reports which could be analysed. Of those 187 cases remained without symptoms, 104 were classified as minor and 77 cases had moderate, severe or fatal outcomes (Table 7).

Table 7

Agent groups and severity of animal poisoning

Agent groups	Outcome					Total	
	N	Mi	Mo	S	F		
Pharmaceuticals	56	22	11	6	–	95	25.8 %
Agricultural and horticultural products	45	13	8	7	1	74	20.1 %
Veterinary products	27	16	7	6	1	57	15.5 %
Plants	12	22	8	1	–	43	11.7 %
Food and beverages	20	10	6	–	–	36	9.8 %
Household products	13	11	6	1	–	31	8.4 %
Technical and industrial products	5	2	1	3	2	13	3.5 %
Recreational drugs, alcohol	4	3	–	–	–	7	1.9 %
Venomous animals	2	1	–	1	1	5	1.4 %
Cosmetics and personal care products	–	3	–	–	–	3	0.8 %
Mushrooms	1	1	–	–	–	2	0.5 %
Others or unknown agents	2	–	–	–	–	2	0.5 %
Total	187	104	47	25	5	368	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 unblinding in randomized clinical trials
5. distribution of printed materials, in particular 15 347 pamphlets.

The website was visited 151 481 times (previous year 133 624).

Senior medical staff regularly carry 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 continue 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 in the subject of special clinical toxicology (1st year Master studies: module emergency medicine) and to the master course in toxicology at the University of Basel. Permanent academic staff regularly gives presentations in clinical toxicology for the postgraduate and continu-

ing education of physicians as well as 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.

Ten papers were presented at the annual congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) in London. Two papers were presented at the North American Congress of Clinical Toxicology (NACCT) in Las Vegas as well as one paper at the specialist meeting of the Society for Clinical Toxicology (GfKT) in Bonn.

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. Two dissertations have been completed, two more are 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 in exchange the STIC has constant access to the confidential data in the Federal Office of Public Health's product database Indatox Plus. The STIC is involved in the federal information campaign for the GHS (Globally Harmonized System).

H. Kupferschmidt was a member of the strategic board 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.

Within the framework of collaboration with the CBRN-Laboratory Spiez and the Coordinated Medical Services (CMS) the STIC developed, together with a team of experts, an eLearning Module on the subject of 'Medical CBRN-protection'. In addition, the STIC organised for the fourth time the 'Advanced Hazmat Life Support' (AHLs) course in collaboration with the SFG (Medical Rescue in major events under the direction of KSD).

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 undesired drug effects as part of the national pharmacovigilance 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 (such as Toxbase in the UK and Toxinz in New Zealand). 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 was also involved in the Executive Committee of 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 in the Swiss List of Antidotes yearly. 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 2013: The quantity of fomepizole kept in stock has been increased (new 2–4 g) as the substance can be dialysed and thus its dosage needs to be increased when using haemodialysis. Also, N-acetyl cysteine must be used in higher dosage when using haemodialysis in paracetamol poisonings. During the course of 2013 atropine will become available again in vials at 100 ml each to treat intoxications requiring high doses of atropine. Recently there have been case reports where methylene blue was used as a last resort to successfully treat severe arterial hypotension caused by intoxications. Methylene blue has been used for about 20 years on a trial basis to treat septic shock, but this has not become standard clinical practice due to its adverse effects. The list of antidotes for decontamination hospitals that has been defined by the

representative of the Federal Council for the co-ordinated rescue services (KSD) has become compulsory in 2013.

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 new 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 in the course of 2011). By the middle of 2013 two products have 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 adverse drug events of antidotes').

Table 8

The assortments 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 gluconate (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).

Antidote assortment 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), A. Züst (Zurich) and H. Kupferschmidt (Chairman, Zurich).



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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.

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SCIENCEINDUSTRIES

(trade association of chemical, pharmaceutical and biotechnology companies)

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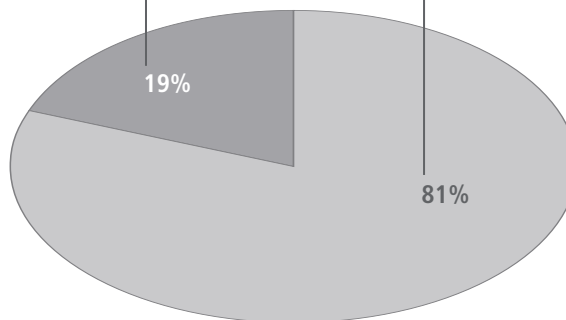
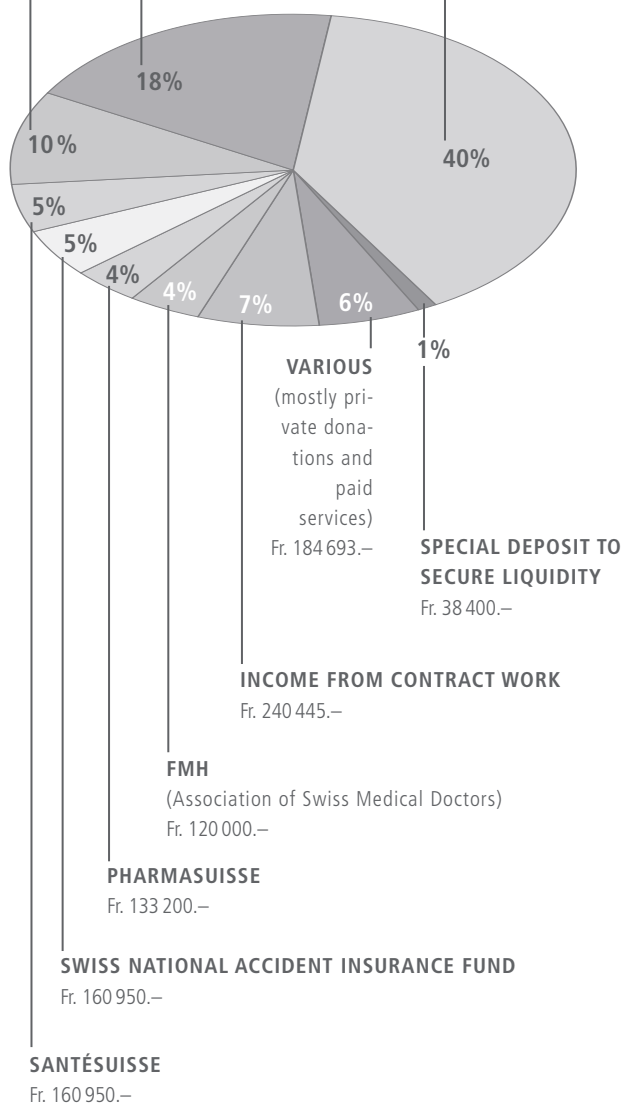
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- santésuisse (SAS)
- the Association of Swiss Medical Doctors (FMH).

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