



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

## ■ Annual Report 2011

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## ■ Editorial

Dear Readers

Once again the Swiss Toxicological Information Centre (STIC) can be proud to present its achievements:

**Emergency phone 145:** Despite all the safety precautions in our daily life the STIC is in no way losing its importance. On the contrary: more than 35 000 enquiries, an increase of 3.7 % compared to 2010, were dealt with by the poisons information specialists of the STIC in 2011. The STIC is open 24/7, offers competent advice, maintains a unique database and thus contributes to public health in a unique way. The STIC is an independent information centre for poisoning incidents in Switzerland and is available free of charge to all residents in Switzerland – without appointment: a phone call will suffice!

**Well connected, independent and autonomous, effective:** The STIC has been recognised as an associated, but independent institute of the University of Zurich and a corresponding contract was signed in 2011. This does not only streamline collaboration in research and education in clinical toxicology, but also facilitates exchange with foreign universities. As an institution the services of the STIC benefit the population as a whole. Physicians, pharmacists, veterinarians and hospitals appreciate the competent advice given when their patients show acute symptoms of poisonings. Over the years the STIC has become an institution one would not like to miss, which is also demonstrated by the press and media coverage it receives. Such a success is made possible only through the commitment and motivation of the people behind it doing their best on a daily basis. The fact that staff turnover is low shows how well the STIC and its staff are managed – this is the foundation for its continuous high achievement!

**Solidarity, Joy, Worries and Finances:** The STIC is recognised throughout Switzerland and is funded by the state, cantons, professional associations, industry, donors and benefactors. The Swiss Insurance Association (SIA) ceased to be a funding body of the STIC at the end of 2010 which had an adverse effect on budget planning, causing a deficit in the annual accounts and raising concerns about sufficient funding being available for the coming years. Without the necessary funds the achievements mentioned above are not possible. With immense gratification we have noted the medical profession's (FMH) decision in November 2011 to rejoin the Foundation Council as a supporting member. This somewhat eases the financial situation of the STIC, nevertheless all opportunities will also have to be fully utilised in the future to ensure a balanced budget. We continue to expect a substantial number of enquiries and the complexity of the cases is expected to increase. This leads to an individual case taking up more time which in the long term will lead to a slight increase in staff numbers and correspondingly increased staff cost.

**Change in the leadership of the Foundation Council, thanks and joy:** At the end of 2011 I took over from Dr. Franz Merki, who had served the Foundation Council as its President for more than 20 years. It is with much gratitude that I have taken over such a well run foundation. I am honoured to be able to thank him for his service and achievement. I would also like to express my thanks to the management and staff for their dedication and commitment and to the funding bodies as well as the foundation council for their valuable support!

ELISABETH ANDEREGG-WIRTH  
PRESIDENT OF THE FOUNDATION COUNCIL





## Introduction

The annual report for the year 2011 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 2011 35 576 consultations were carried out by the STIC. Thus we saw a further rise in the number of consultations in the reporting year (+3.77 % versus 2010 and +6.6 % in the past three years). As in previous years theoretical (preventive) enquiries decreased further (–2.4 %), the increase in consultations following exposures is therefore all the more evident (+4.5 %). 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 delivery 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 takes medical 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 increased again substantially (+6.4 %), following a transient slight decrease in 2010; the number of consultations with regard to intentional poisonings decreased slightly (–2.7 %). Both are in line with a trend seen in the last few years. A detailed analysis of the number of patients concerned («cases») shows that repeat consultations (difference between the number of con-

sultations and the number of cases) are on the increase (patients with accidental poisonings +5.8 %; with intentional poisonings –3.8 %). The reasons for this are renewed consultations for new facts in the course of the poisoning, or when patients are transferred, or when new persons in charge are involved.

The number of moderate and severe poisonings increased significantly compared to the previous year (1320 versus 1137, +16.1 %), especially in adults (+17.8 %, in children +0.9 %). The STIC recorded 11 fatal poisonings in humans in the reporting year, which is the average from previous years. In animals 9 fatal cases were seen. Pharmaceuticals as well as technical and industrial products caused the fatal poisonings in humans. The cluster of fatal paracetamol intoxications (3 cases) is a cause for concern; the other pharmaceuticals involved were colchicine, methotrexate, doxepin, insulin and oxycodone/trazodone (1 case each). The 3 non-pharmaceutical fatal poisonings were caused by ethylene glycol, petroleum and strong bases (alkali hydroxide).

The association with the University of Zurich (Faculty of Medicine) was put into effect in August 2011 when the association contract was signed, which regulates the relationship between the STIC and the University. The STIC now has the status of an associated institute of the University. However, the STIC remains independent and does not become an organisational unit of the University. Through this association, research and education in clinical toxicology will be supported at high levels. The scientific activities at the STIC continue to develop well through the work of the scientific services; the publications resulting from completed projects can be found in the list of publications included in this annual report.

## Focus

Overdosage with antidepressants is frequent. Particularly dangerous are poisonings with **tricyclic antidepressants** which can lead to unconsciousness, seizures, cardiac arrhythmias and death. Although there are antidepressants on the market which are markedly safer in overdose and only very rarely result in fatalities, tricyclic antidepressants continue to be prescribed fairly frequently and are also being used in part to treat anxiety disorders and chronic pain.

Within the framework of a dissertation poisonings with **trimipramine**, a tricyclic antidepressant, were investigated at the STIC last year (Gutscher K et al. Br J Clin Pharmacol 2012). A total of 230 cases over 18 years were analysed. Most frequently a reduction in consciousness was observed, furthermore cardiac arrhythmias, agitation, confusion, gastrointestinal symptoms, drop in blood pressure, seizures and cardiac arrest. 9.1 % of the cases were severe, in 3 cases severe arrhythmias resulted in death. A clear dose-effect relationship could be seen in that patients, who developed severe or even fatal symptoms, had ingested significantly higher doses. Furthermore it could be shown that an early decontamination (administration of activated charcoal) tended to lead to a less severe outcome. The results of the dissertation improve the prediction of the clinical course and the management of acute poisoning with trimipramine.

Compared to the previous year **enquiries relating to plants** increased substantially in 2011 (+15 %). This could be primarily due to weather conditions as 2011 was the warmest year in Switzerland since records began. An analysis of all plant-related enquiries received during the past 15 years in the course of a dissertation (Fuchs J et al. Clin Toxicol 2011) has shown that unidentified berries were the most frequent enquiries followed by *Prunus laurocerasus* (cherry laurel), ficus and taxus (common yew). More than 80 % of cases analysed concerned children. They mostly ingested only a few berries or very little of other plant material which usually did not lead to severe intoxications. Thus the dissertation only listed 8 severe poisonings in children

and one tragic, accidental death. In adolescents misuse of psychotropic plants was most commonly reported. Attempted suicide or misuse was the most common reason for the ingestion of plants in adults, correspondingly the dose was higher and the course more severe. In the course of 15 years 3 fatal and 37 severe poisonings were reported in adults. However, in this age group accidental ingestions were also registered, including 2 of the 3 fatal cases. Both were caused by the ingestion of meadow saffron. Plants most commonly involved in severe and fatal poisonings are angel's trumpet (*Datura* or *Brugmansia suaveolens*), thorn apple (*Datura stramonium*), aconite (*Aconitum napellus*), deadly nightshade (*Atropa belladonna*) and meadow saffron (*Colchicum autumnale*).

Gastrointestinal chemical burns after oral **ingestion of corrosive products** were seen in 45 cases in 2011 (+36 % compared to 2010). 53 % of the cases were caused by accidental ingestion; in 40 % of the cases the ingestion was intentional to commit suicide. 33 were adults (average age 44 years) and 12 children (5.5 years). 53 % of the cases were caused by technical and industrial products, 36 % by domestic products. In 4 cases pharmaceuticals were involved, iron preparations in two of the cases, disinfectants in a further two cases. Internal corrosion was observed once following ingestion of concentrated acetic acid (to be diluted for food preparation). All cases were symptomatic: in 18 cases (40 %) mild symptoms occurred, moderate in 15 cases (33 %) and severe in 11 cases (24 %). One case had fatal complications: in a restaurant, an elderly gentleman was served a glass of white wine which contained a corrosive cleaning agent. Time and again decanting corrosive products into drinks bottles causes accidents and because of this the STIC will investigate these cases in the course of a dissertation to see if preventive measures can be identified.



## 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 2011, the information service of the STIC received 35 576 enquiries which represents an increase of 3.77 % compared to the previous year.

Figure 1

#### Number of enquiries to the STIC over the last ten years

2002	33 111
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

#### Origin of calls

Table 1 shows the number of calls received in 2011 from the individual cantons of Switzerland and the different population groups.

The largest number of calls came from the general public (64.8 %). 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 (4.3 per 1000 inhabitants). The smallest number of calls was received from the cantons of Tessin, Nidwalden and Jura.

Physicians used our service 9250 (26.0 %) times. Calls made by hospital physicians increased by 195 compared to the year 2010. However, calls by general practitioners decreased by 14. Veterinarians accounted for 705 calls to the STIC. Based on population, the largest proportion of physician calls came from the cantons of Basel Stadt, Glarus and Zurich, followed by Aargau, Jura and Schaffhausen. Pharmacists submitted 544 inquiries to the STIC.

The STIC answered 132 requests for information from the media (newspapers, radio and television). 1886 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 2011 by cantons and population groups

Canton	Population	General public	Hospital doctors	Practitioners	Veterinarians	Pharmacists	Various	Total	Calls/1000 Public	inhabitants Physicians
AG	611 466	1 800	631	77	50	63	156	2 777	3.0	1.3
AI	15 688	54	3	7	1	–	–	65	3.4	0.7
AR	53 017	129	36	12	2	2	9	190	2.4	0.9
BE	979 802	3 031	856	182	100	79	264	4 512	3.1	1.2
BL	274 404	770	172	38	23	9	47	1 059	2.8	0.9
BS	184 950	575	336	43	14	23	72	1 063	3.1	2.1
FR	278 493	764	218	30	14	20	52	1 098	2.8	1.0
GE	457 715	959	416	71	15	34	59	1 554	2.1	1.1
GL	38 608	81	33	19	7	1	2	143	2.1	1.5
GR	192 621	432	151	46	14	16	32	691	2.3	1.1
JU	70 032	112	86	6	1	3	9	217	1.6	1.3
LU	377 610	930	310	79	23	8	100	1 450	2.5	1.1
NE	172 085	425	163	14	16	31	37	686	2.5	1.1
NW	41 024	62	17	6	3	5	5	98	1.5	0.6
OW	35 585	114	23	9	3	2	6	157	3.3	1.0
SG	478 907	1 259	440	102	46	15	118	1 980	2.7	1.2
SH	76 356	188	79	10	8	4	27	316	2.5	1.3
SO	255 284	720	147	49	25	10	63	1 014	2.8	0.9
SZ	146 730	342	83	27	10	2	26	490	2.4	0.8
TG	248 444	651	214	50	24	10	59	1 008	2.7	1.2
TI	333 753	448	374	33	7	17	30	909	1.3	1.2
UR	35 422	82	23	4	2	3	13	127	2.3	0.8
VD	713 281	1 721	611	101	48	64	117	2 662	2.5	1.1
VS	312 684	606	181	35	24	19	35	900	2.0	0.8
ZG	113 105	289	67	25	17	4	19	421	2.6	1.0
ZH	1 373 068	5 759	1 581	303	160	98	581	8 482	4.3	1.5
FL	36 149	91	4	12	–	1	5	113	2.5	0.4
Foreign	–	259	578	19	44	–	50	950	–	–
Unknown	–	406	1	7	4	1	25	444	–	–
<b>Total</b>	<b>7 906 283</b>	<b>23 059</b>	<b>7 834</b>	<b>1 416</b>	<b>705</b>	<b>544</b>	<b>2 018</b>	<b>35 576</b>	<b>2.9</b>	<b>1.3</b>
%	–	64.8	22.0	4.0	2.0	1.5	5.7	100	–	–

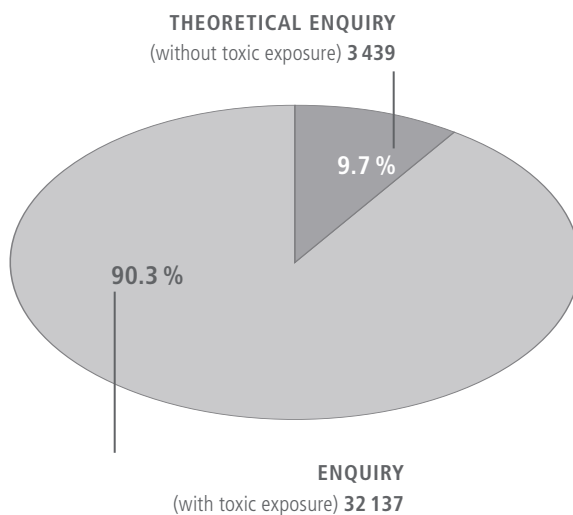


### Types of calls

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

Figure 2

Types of calls (n = 35 576)



Among the 3439 calls (compared to 3522 in the previous year, -2.36 %) 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 organisations as well as distribution of fact sheets and referring enquiries to appropriate experts.

The 32 137 enquiries following toxic exposure concerned 30 616 humans (compared to 29 308 in the previous year, +4.46 %) and 1521 animals (compared to 1453, +4.68 %). 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 cases with toxic exposure (28 406). Children were involved in 55.3 % of the cases, adults in 44.6 %. In 44 cases (0.2 %), the age group remained unknown.

The highest number of cases involved children below five years of age (46.5 %). Boys were more frequently represented amongst the children (51.4 % vs. 47.0 %) and women amongst the adults (58.5 % vs. 40.9 %).



Table 2  
Age and gender of human cases with toxic exposure

	Age	female	male	unknown	Total		
<b>Children</b>		<b>7 378</b>	<b>47.0 %</b>	<b>8 076</b>	<b>51.4 %</b>	<b>253</b>	<b>15 707</b>
Age	< 5 Years	6 169	83.6 %	6 867	85.0 %	170	13 206
	5 – < 10 Years	533	7.2 %	668	8.3 %	18	1 219
	10 – < 16 Years	466	6.3 %	380	4.7 %	4	850
	unknown	210	2.8 %	161	2.0 %	61	432
<b>Adults</b>		<b>7 408</b>	<b>58.5 %</b>	<b>5 171</b>	<b>40.9 %</b>	<b>76</b>	<b>12 655</b>
Age	16 – < 20 Years	483	6.5 %	354	6.8 %	1	838
	20 – < 40 Years	1 687	22.8 %	1 314	25.4 %	14	3 015
	40 – < 65 Years	1 398	18.9 %	996	19.3 %	11	2 405
	65 – < 80 Years	342	4.6 %	228	4.4 %	–	570
	<b>80+ Years</b>	170	2.3 %	109	2.1 %	–	279
	unknown	3 328	44.9 %	2 170	42.0 %	50	5 548
<b>Unknown</b>		<b>18</b>	<b>40.9 %</b>	<b>9</b>	<b>20.5 %</b>	<b>17</b>	<b>44</b>
<b>Total</b>		<b>14 804</b>	<b>52.1 %</b>	<b>13 256</b>	<b>46.7 %</b>	<b>346</b>	<b>28 406</b>

### Circumstances of poisoning

Table 3 shows the circumstances of poisoning in the 28 406 cases with toxic exposure. **Acute accidental intoxications** (22 208 compared to 20 996 in the previous year, +5.77 %) 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 (997).

**Acute intentional poisoning** was mostly due to attempted suicide (3 301 cases, compared to 3 244 in the previous year, +1.76 %), less frequently due to drug abuse (471 cases), poisoning incidents in connection with criminal actions were rare and remained unchanged (101 cases, previous year 106).

**Chronic poisoning** was relatively rare (943 cases) compared to acute intoxications. **Adverse drug reactions** in therapeutic doses led to 238 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	19 919	70.1 %	376	1.3 %
Accidental occupational	997	3.5 %	87	0.3 %
Accidental environmental	15	0.1 %	27	0.1 %
Accidental others	1 277	4.5 %	74	0.3 %
<b>Total accidental</b>	<b>22 208</b>	<b>78.2 %</b>	<b>564</b>	<b>2.0 %</b>
Intentional suicide	3 301	11.6 %	47	0.2 %
Intentional abuse	471	1.7 %	109	0.4 %
Intentional criminal	101	0.4 %	5	0.02 %
Intentional others	731	2.6 %	218	0.8 %
<b>Total intentional</b>	<b>4 604</b>	<b>16.2 %</b>	<b>379</b>	<b>1.3 %</b>
<b>Total accidental and intentional</b>	<b>26 812</b>	<b>94.4 %</b>	<b>943</b>	<b>3.3 %</b>
<b>Total acute and chronic</b>		<b>27 755</b>	<b>97.7 %</b>	
<b>Adverse drug reactions</b>		<b>238</b>	<b>0.8 %</b>	
<b>Unclassifiable/others</b>		<b>413</b>	<b>1.5 %</b>	
<b>Total</b>		<b>28 406</b>	<b>100 %</b>	

### Agents involved

For analysis, the agents and toxins were split up into twelve groups. Table 4 shows these different groups and how often they were involved in the total of 28 406 poisonings in humans.

Most toxic exposures occurred with pharmaceuticals (35.5 %), followed by household products (26.4 %) and plants (10.2 %). Details of the individual agent groups are available in a supplement to this Annual Report which can be ordered separately on [www.toxi.ch](http://www.toxi.ch).

### Severity of poisonings

8969 enquiries from physicians (97.0 % 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 75.8 % 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	5 391	4 691	9	10 091	35.5 %
Household products	2 315	5 174	12	7 501	26.4 %
Plants	541	2 360	6	2 907	10.2 %
Technical and industrial products	1 356	344	5	1 705	6.0 %
Cosmetics and personal care products	224	1 361	–	1 585	5.6 %
Food and beverages	671	459	3	1 133	4.0 %
Recreational drugs, alcohol	592	405	2	999	3.5 %
Agricultural and horticultural products	343	369	2	714	2.5 %
Mushrooms	286	169	–	455	1.6 %
Venomous animals	269	105	1	375	1.3 %
Veterinary drugs	64	35	1	100	0.4 %
Others or unknown agents	603	235	3	841	3.0 %
<b>Total</b>	<b>12 655</b>	<b>15 707</b>	<b>44</b>	<b>28 406</b>	<b>100 %</b>

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 that 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.

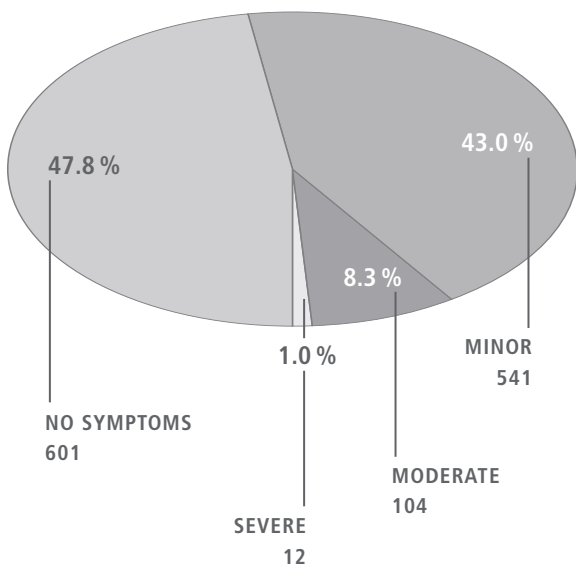
4852 human cases both asymptomatic and symptomatic with sufficient evidence of causality were analysed further with regard to clinical course (+8.5 %).

1258 cases involved children and 3594 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.

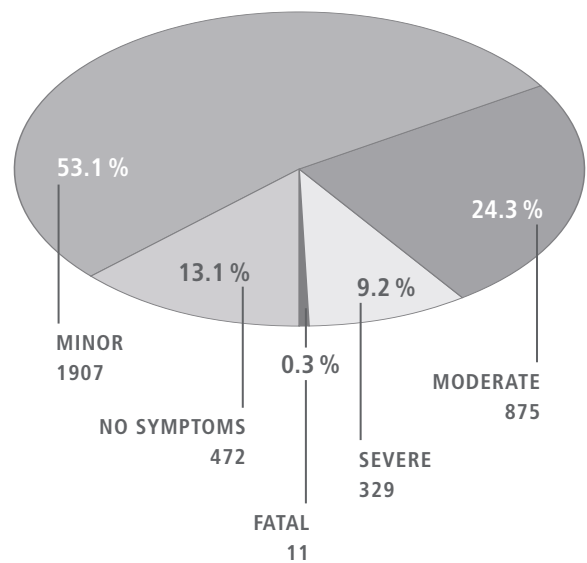


Figure 3  
**Clinical outcome of poisoning cases in children and adults**

**Children (n = 1258)**



**Adults (n = 3594)**



Amongst children, almost half of the cases (601 = 47.8%) were asymptomatic in contrast to adults where only 472 (13.1%) were asymptomatic. Minor symptoms were observed in 541 children (43.0%) and in 1907 adults (53.1%). Moderate symptoms were seen in 104 children (8.3%) and 875 adults (24.3%). Severe poisoning occurred in 12 children (1.0%) and 329 adults (9.2%). 11 cases in adults had a fatal outcome (0.3%).

Of the 4852 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 (61.4%), followed by household products (10.4%) and technical and industrial products (8.7%).

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	333	1146	549	252	8	356	266	63	8	–	2981	61.4 %
Household products	46	147	32	7	–	119	136	17	–	–	504	10.4 %
Technical and industrial products	34	259	58	12	3	10	37	5	2	–	420	8.7 %
Recreational drugs, alcohol	17	164	142	39	–	15	12	5	2	–	396	8.2 %
Plants	11	18	18	4	–	24	22	3	–	–	100	2.1 %
Mushrooms	2	24	32	1	–	18	5	3	–	–	85	1.8 %
Cosmetics and personal care products	9	14	2	1	–	25	28	5	–	–	84	1.7 %
Agricultural and horticultural products	6	26	6	4	–	12	3	–	–	–	57	1.2 %
Venomous animals	–	23	8	5	–	2	8	2	–	–	48	1.0 %
Food and beverages	2	19	10	2	–	9	7	–	–	–	49	1.0 %
Veterinary drugs	–	4	1	1	–	2	–	–	–	–	8	0.2 %
Others or unknown agents	12	63	17	1	–	9	17	1	–	–	120	2.5 %
<b>Total</b>	<b>472</b>	<b>1907</b>	<b>875</b>	<b>329</b>	<b>11</b>	<b>601</b>	<b>541</b>	<b>104</b>	<b>12</b>	<b>–</b>	<b>4852</b>	<b>100 %</b>

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



## Animal poisoning

### Animals involved

The 1466 calls received concerned the following animal species: 1021 dogs, 311 cats, 53 equine animals (horses, ponies, donkeys), 28 bovine animals (calves, cows, cattle, sheep, goats), 32 rodents (hares/rabbits, guinea pigs, rats, mice), 8 birds (parrots, chickens, penguins), 4 reptiles (tortoises, iguanas, pogonas), 3 pigs, 2 alpacas, 1 monkey, 1 hedgehog, 1 raccoon and 1 fish. 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	
Plants	309	21.1 %
Human pharmaceuticals	290	19.8 %
Agricultural and horticultural products	266	18.1 %
Household products	175	11.9 %
Food and beverages	132	9.0 %
Veterinary drugs	90	6.1 %
Technical and industrial products	49	3.3 %
Venomous animals	34	2.3 %
Recreational drugs, alcohol	19	1.3 %
Cosmetics and personal care products	19	1.3 %
Mushrooms	19	1.3 %
Others or unknown agents	64	4.4 %
<b>Total</b>	<b>1 466</b>	<b>100 %</b>

The calls primarily concerned plants (21.1 %), followed with decreasing frequency by calls relating to pharmaceuticals (19.8 %), agricultural and horticultural products (18.1 %), household products (11.9 %), food and beverages (9.0 %) as well as veterinary drugs (6.1 %).

## Severity of poisonings

Veterinarians were also requested to submit clinical reports on animal poisoning. We received a total of 318 reports which could be analysed. Of those 142 cases remained without symptoms, 94 were classified as minor and 82 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	43	28	10	6	–	87	27.4 %
Agricultural and horticultural products	36	9	7	4	5	61	19.2 %
Plants	15	16	9	3	–	43	13.5 %
Veterinary products	11	9	6	8	4	38	11.9 %
Food and beverages	20	9	1	1	–	31	9.7 %
Household products	7	13	1	–	–	21	6.6 %
Technical and industrial products	3	4	2	2	–	11	3.5 %
Venomous animals	–	2	1	2	–	5	1.6 %
Mushrooms	1	1	2	–	–	4	1.3 %
Recreational drugs, alcohol	1	1	1	–	–	3	0.9 %
Cosmetics and personal care products	1	1	1	–	–	3	0.9 %
Others or unknown agents	4	1	3	3	–	11	3.5 %
<b>Total</b>	<b>142</b>	<b>94</b>	<b>44</b>	<b>29</b>	<b>9</b>	<b>318</b>	<b>100 %</b>

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 9359 pamphlets.

The fee-for-service doping hotline for athletes whose establishment was mandated by Swiss Olympic was utilised 103 times. At the request of Swiss Olympic this service was terminated at the end of 2011 due to a continuously decreasing demand as good alternative sources of information are available via the internet.

The web site was visited 133 624 times (previous year 153 753).

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 (1<sup>st</sup> year Master studies: module emergency medicine). 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 medical emergency services.

Ten papers were presented at the annual congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) in Dubrovnik. Two papers were presented at the North American Congress of Clinical Toxicology (NACCT) in Washington. The STIC was represented with 3 contributions at the 13<sup>th</sup> Annual Congress of the German Clinical Pharmacology Network in Zurich (VKLiPha) and with 4 contributions at the expert conference of the Society of Clinical Toxicology (GfKT) in Bonn. H. Kupferschmidt was one of the organisers and participated in the 2nd Spring Meeting of the Swiss Society of Pharmacology and Toxicology (SSPT) in Bern.

### Research projects

The main focus of the STIC's research efforts in the newly established **scientific services** is the epidemiology and toxicology as well as the dose-effect relationships in human poisonings, in particular relating to drug overdose. Work has begun on one doctoral thesis, one has been completed and a further three are in progress. The STIC has research collaborations with other universities in Bern, Basel, Denver and Boston. H. Kupferschmidt represented the EAPCCT in an international project entitled «Development of an Alerting System and the Criteria for Development of a Health Surveillance System for the Deliberate Release of Chemicals by Terrorists (ASHT)» of the European Commission whose result is the Rapid Alerting System for Chemical Releases (RAS-CHEM) which has now been completed. 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 7<sup>th</sup> framework programme of the European Union (FP7) ([www.plantlibra.eu](http://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 (XeRR) of the Universities of Basel and Zurich as well as EAWAG (Swiss Federal Institute of Aquatic Science and Technology). 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 involved in the federal information campaign for the GHS (Globally Harmonized System).

H. Kupferschmidt is 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 has been developing, together with a team of experts, an eLearning Module on the subject of «Medical CBRN-protection» which was completed in the course of 2011. In addition, the STIC organised for the third 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 the 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](http://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 regularly in the Swiss List of Antidotes. Antidotes are classified in four complementary categories 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 2012:** The list of antidotes for 2012 now contains the range of antidotes for decontamination hospitals defined by the Coordinated Medical Services (CMS). It will be mandatory from 2013. The antidotes for radionuclides have been described in more detail. The range of antidotes for the ambulance and emergency services (pre-hospital use, «Swiss ToxBBox») started in 2011 has been well established. In the course of 2012 atropine in vials of 100 ml each will be available again for poisonings requiring treatment with high doses of atropine. The dosage recommendation for insulin/glucose in poisonings with calcium channel blockers was updated (now up to a maximum of 10 IU/kg/h) in line with new data published in the specialist literature. In the European Union a new methylene blue preparation has been registered which is no longer contaminated with heavy metals from the production process. Intralipid®, which had been used to treat cardiac toxicity of lipophilic active ingredients, is no longer available; current state of knowledge indicates that it can be replaced with 20 % lipid emulsions of different brands. The websites for antidotes and antivenoms can now be found via direct links ([www.antidota.ch](http://www.antidota.ch), [www.antivenin.ch](http://www.antivenin.ch)).

**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 2012 three products have been registered using this simplified registration process.

Swissmedic decided to simplify registration requirements for these products in order to guarantee their supply in Switzerland. 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 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 gluconate (ampoules), calcium gluconate (hydrogel), colestyramine, dantrolene, ethanol, flumazenil, glucagon, insulin, lipid emulsion, magnesium, N-acetylcysteine, naloxone, sodium bicarbonate, sodium polystyrene sulfonate, phytonadione (vit. K), pyridoxine (vit. B<sub>6</sub>).

**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, hydroxycobalamine, 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](http://www.antivenin.ch)).

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

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 (Inselspital), Geneva and Zurich, the cantonal hospitals in Chur and Münsterlingen, and the Ospedale San Giovanni in Bellinzona.

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](http://www.antidota.ch)» or at «[www.pharmavista.net](http://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).



## Publications

### Zahnschmerzen, Hemisyndrom, epileptische Krampfanfälle, metabolische Azidose und Koma – the missing link.

Auf der Maur F, Reichert C, Jenni C. Schweiz Med Forum 2011; 11: 140–1.

### Administration of pharmaceuticals by the wrong route: a poisons centre-based study on inadvertent parenteral applications. (abstract)

Bloch-Teitelbaum A, Lüde S, Rauber-Lüthy C, Kupferschmidt H, Kullak-Ublick GA, Ceschi A. Br J Clin Pharmacol 2011; 72 Suppl.1: 24.

### Acute laryngotracheitis after accidental aspiration of clindamycin.

Ceschi A, Von Dechend M, Krause M, Kengelbacher M, Stuerer A. Q J Med 2011; 104: 609–11.

### Gastric pharmacobezoars in quetiapine overdose: a case series. (abstract)

Ceschi A, Rauber-Lüthy C, Bodmer M, Kupferschmidt H, Hofer KE. Clin Toxicol 2011; 49: 533–4.

### Monitoring of adverse drug reactions: a 7-year study among Swiss pharmacovigilance centres. (abstract)

Ceschi A, Curkovic I, Damke B, Sift Carter R, Rauber-Lüthy C, Kupferschmidt H, Russmann S, Kullak-Ublick GA, Huber M. Br J Clin Pharmacol 2011; 72 Suppl.1: 16.

### Paracetamol orodispersible tablets: a risk for severe poisoning in children?

Ceschi A, Hofer KE, Rauber-Lüthy C, Kupferschmidt H. Eur J Clin Pharmacol 2011; 67: 97–9.

### Performance of different data sources in identifying adverse drug events in hospitalized patients.

Egbring M, Far E, Knuth A, Roos M, Kirch W, Kullak-Ublick GA. Eur J Clin Pharmacol 2011; 67: 909–18.

### Meadow saffron used as a spice. (abstract)

Faber K, Arenz N, Zemrani B, Ceschi A. Clin Toxicol 2011; 49: 229–30.

### Acute plant poisoning: analysis of clinical features and circumstances of exposure.

Fuchs J, Rauber-Lüthy C, Kupferschmidt H, Kupper J, Kullak-Ublick GA, Ceschi A. Clin Toxicol 2011; 49: 671–80.

### Acute trimipramine poisoning: analysis of clinical features and factors influencing severity. (abstract)

Gutscher K, Rauber-Lüthy C, Kupferschmidt H, Ceschi A. Clin Toxicol 2011; 49: 267.

### Moderate toxic effects following acute zonisamide overdose.

Hofer KE, Trachsel C, Rauber-Lüthy C, Kupferschmidt H, Kullak-Ublick GA, Ceschi A. Epilepsy Behav. 2011; 21: 91–3.

### Akute Lebensmittelvergiftungen.

Kupferschmidt H. Oekoskop 2011; 3: 18–20.

### Koma statt Euphorie.

Kupferschmidt H. VSAO JOURNAL ASMAC 2011; 2: 30–1.

### Schweizerisches Antidot-Sortiment für die Präklinik: «Swiss ToxBBox».

Kupferschmidt H, Albrecht R, Feiner AS, Neff F, Müller S, Zürcher M, Bürgi U. Schweiz Ärztzeitg 2011; 92: 190–2.

### Usefulness of experimental toxicity data for the treatment of acute human poisoning. (abstract)

Kupferschmidt H. Toxicology Letters 2011; 29–30.

### Vergiftungen bei verschiedenen Altersgruppen. (abstract)

Kupferschmidt H. Notfall Rettungsmed 2011; Suppl.1: 26.

### Chemikalienrisiko nach Hochwasser.

Kupper J, Meng L, Baumann D, Walser K, Walser M, Del Chicca F, Naegeli H. Schweiz. Arch. Tierheilk. 2011; 153: 411–14.

### Ist es wirklich eine Vergiftung?

Kupper J, Nägeli H, Wehrli Eser M. Vet Journal 2011; 7-8: 38–46.

### Das Vergiftungsjahr 2010.

Lüde S, Fuchs J, Rauber-Lüthy C, Reichert C, Stürer A, Kupferschmidt H. pharmajournal 2011; 24: 25–7.

### Angiotensin II antagonists – an assessment of their toxicity. (abstract)

Prasa D, Hoffmann-Walbeck P, Barth S, Stedtler U, Rauber-Lüthy C, Färber E, Genser D, Hentschel H. Clin Toxicol 2011; 49: 266–7.

### Das Pilzjahr 2010.

Schenk-Jäger K. SZP – Schweiz Zeitschr Pilzkd 2011;3: 101–5.

### Fifteen-year retrospective analysis of amatoxin poisonings in Switzerland. (abstract)

Schenk-Jaeger KM, Rauber-Lüthy C, Kupferschmidt H, Ceschi A. Clin Toxicol 2011; 49: 233.

### Periskop 31.

Schenk-Jäger K. SZP – Schweiz Zeitschr Pilzkd 2011;1: 15–6.

### Periskop 35.

Schenk-Jäger K. SZP – Schweiz Zeitschr Pilzkd 2011;5: 208–10.

### Wichtigste Pilzvergiftungssyndrome.

Schenk K, Philbet T. pharmajournal 2011; 18: 5–7.

### Haemolytic anaemia and abdominal pain – a cause not to be missed.

Toniolo M, Ceschi A, Meli M, Lohri A, Favre G. Br J Clin Pharmacol 2011; 72: 168–9.

### Toxicological aspects in hospital pharmacy practice.

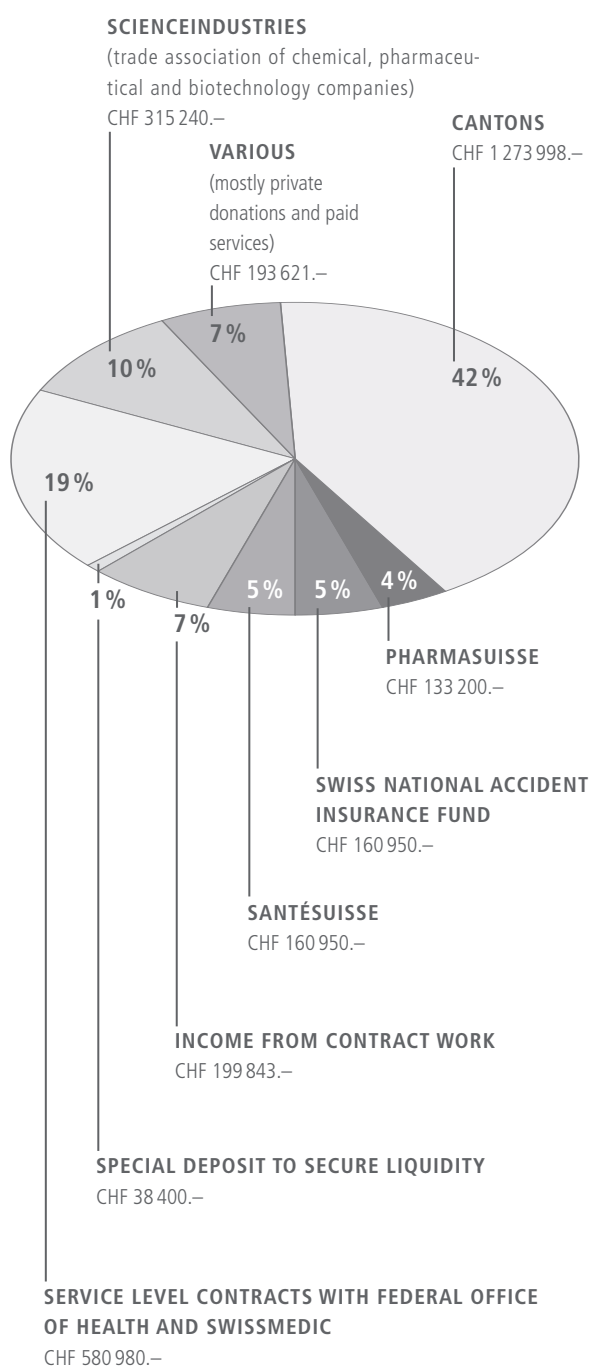
Touw DJ, Kupferschmidt H. EJHPPractice 2011; 17: 22–3.

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](mailto:info@toxi.ch). Some of these publications can be downloaded from our website [www.toxi.ch](http://www.toxi.ch).

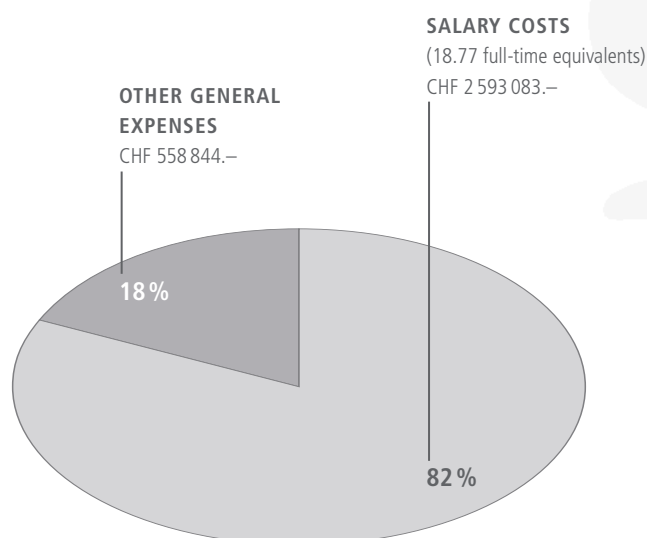
In addition, the revised leaflet about first aid and poisoning prevention is available as well as emergency telephone number stickers in German, French and Italian. Dissertations are only available on loan.

## Income and expenditure

Income CHF 3 057 182.–



Expenditure CHF 3 151 927.–





## ■ Donations

Donation in memoriam to Dr. med. V. Studer	10 000
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- ? pharmaSuisse
- ? scienceindustries (trade association of chemical, pharmaceutical and biotechnology companies)
- ? the Swiss National Accident Insurance Fund (SNAIF)
- ? santésuisse (SAS).

The Federal Office of Public Health (FOPH, consumer protection directorate) has a service level agreement with the STIC for tasks in compliance with the chemicals law. Swissmedic pays for services in the area of toxicovigilance of drugs, also on the basis of a service level agreement. Substantial donations and contributions are also received from private companies and individuals.

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Numerous experts from hospitals, institutes, state and federal organisations act as honorary advisers, most notably Jean-Pierre Lorent (former Director of the STIC), Martin Wilks M.D. (SCAHT) and Prof. Philippe Hotz M.D. (University of Zurich, occupational and environmental medicine).

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