



Swiss Toxicological  
Information Centre

## ■ Annual Report 2009

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## ■ Editorial

Dear Readers

During the past year focal themes have been the general future development of the Swiss Toxicological Information Centre (STIC) on the one hand, and on the other hand the medium and long term financial development and the widening of its financial basis, a topic that has been present since the STIC's foundation. The Foundation Council focussed on this subject during two retreats held in the reporting year. The conclusions from these meetings point to possible future developments and thus form the basis for the Foundation Council's work on developing future strategies. However, the report also suggests concrete steps aiming at increasing the medium term financial liquidity of our institution, either through a one time addition of financial reserves, or through other means such as extending the notice period of current contracts. These measures have now mostly been put in place thanks to the understanding and cooperation of our supporting partners. It is of great satisfaction to me that all our partners have shown willingness to support and financially contribute to the STIC in spite of the difficult economic times we currently live in. I appreciate this very much and I thank them for their understanding.

The negotiations with the University of Zurich on the STIC's association were not yet completed by the end of 2009. We do, however, have reasons to be optimistic that they can be

completed in 2010. We have been fortunate in appointing Dr. med. A. Ceschi to the position in the Scientific Service thus being able to fill this important staff vacancy.

Once again, we are able to report that the STIC provides an impeccable service and that the public perception of the STIC is good, also thanks to regular media work. The same applies to scientific networks.

Two long-standing and trusted members have left the Foundation Council in the reporting year: Dr Jean-Claude Tarchini (member of the Foundation Council since 1989 representing pharmaSuisse) and Dr Werner Pletscher (member since 1998 representing the CDS). Mrs Elisabeth Anderegg-Wirth (pharmaSuisse) and Dr Samuel Steiner (CDS) have been elected as their successors. My thanks go to the retiring members for their commitment and dedication to the STIC. I wish the new members success and pleasure in fulfilling their new roles.

My thanks go to the management and staff of the STIC for their commitment and hard work, and to the Foundation Council and the supporting members for their trust and support.

DR. FRANZ MERKI  
PRESIDENT OF THE FOUNDATION COUNCIL



## Introduction

The annual report for the year 2009 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. A graphical illustration has been added to the website showing the development over the last ten years.

In 2009 the STIC dealt with 34 022 enquiries which represents a further increase in the reporting year (a rise of 2 % compared to 2008 and 9.1 % in the past three years). Theoretical (preventive) enquiries have decreased further which can be explained by the fact that the general public as well as experts have easy access to information via the Internet, especially in non urgent cases. The STIC is also continually expanding the information available on its website.

There has been a further increase in enquiries relating to accidental poisonings (22 853, +4.7 %), whereas fewer consultations were required in relation to intentional poisonings (5 363, -4.8 %). The STIC dealt with a higher number of moderate and severe poisonings in the reporting year compared to the average over the past five years (968 as opposed to 860, +12.6 %). 13 fatal human poisonings were registered in the reporting year which is in line with previous years. For animal poisonings 6 fatal cases were reported. Pharmaceuticals are predominant in fatal human poisonings, mostly antidepressants, sedatives and cardiovascular drugs. One fatality each was caused by smoke inhalation, potassium cyanide, and Amanita mushrooms resp. in non pharmaceutical poisonings. Of the 13 reported fatalities 8 of the victims were over 65 years old. In the cases reported by the STIC, the rate of lethal outcome in over 65-year-olds (1.94 %) was seven-fold higher than in under 65-year-olds. This raises ques-

tions about age-dependent issues regarding the risks for and management of acute poisonings.

Contacts with the Coordinated Medical Services (KSD) confirm that the STIC plays an important role in handling major events with dangerous chemical substances especially with regard to its medical aspects. Nevertheless the STIC's role has up to now not been clearly defined in the operational guidelines of the emergency services which is clearly recognised as a deficiency. The contribution of the STIC to the eLearning project for medical and emergency handling of CBRN-incidents, in particular the development of the module «Medical CBRN-protection» by the STIC and the successful implementation of two «Advanced Hazmat Life Support» courses in 2009 and 2010 are important steps in this direction.

At the end of 2009 the new database software ToxiNova which has been developed together with the company binair was successfully put into operation. This replaces the old system from 1995. Important properties of the new system are improvements in the interface with other databases and the modern IT platform which further improves clarity and readability. A change in emphasis was implemented which means that under the new system the individual patient and no longer the call is logged as a case. Thus the focus of data collection and documentation moves away from the reporting to the medical aspect which facilitates support in the care of the poisoning cases and their scientific evaluation.

With the appointment of the position in Scientific Service in October 2009 an important step was taken to extend and improve research and teaching at the STIC. The results we have seen to date are promising. This position was recommended in the evaluation by international experts in 2006 and is listed in the letter of intent negotiated with the University of Zurich for the proposed association – it enables scientific projects to be carried out more efficiently and faster.

## Focus

**New applications and formulation changes** of well-known active ingredients can lead to altered and unexpected poisonings. For several years now a melting tablet has been available of paracetamol, a well-known and common pain-killer which can lead to severe liver damage in overdose. The melting tablet dissolves easily once it comes into contact with saliva and can then be swallowed without any problems. A case study from the STIC shows that toddlers getting access to this preparation tend to take bigger quantities of these tasty and tingly tablets compared with standard formulations. This is facilitated further by the fact that the tablets are distributed in tubes and not in blister packaging.

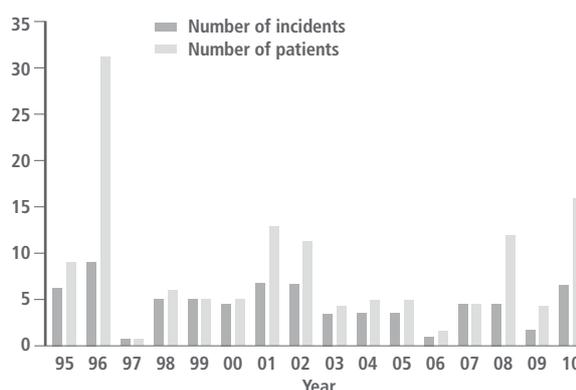
**Phosphides** are being used as rodenticides. Once they come into contact with water, they release phosphine gas which smells of garlic and is highly toxic through blocking mitochondrial oxidative phosphorylation. Phosphides also act as potent irritants for mucous membranes. Severe and fatal poisonings occur frequently in developing countries. Poisonings are also regular occurrences in Switzerland, always as a result of improper usage. The STIC was consulted in 71 incidents between 1995 and the middle of 2010 with 133 humans being affected (Figure 1). In 65 of these cases the same single product was involved. Since the poisonous gas was frequently released in the open and could thus easily dissipate, or the exposed people could quickly move to safety, all of these cases experienced only mild symptoms. There has been a single fatal incident in 1999 when a vole bait containing aluminium-phosphide was ingested.

**Globally Harmonized System (GHS):** This system developed by the United Nations for classification, labelling and packaging is being introduced by an increasing number of countries worldwide. It has also been in use in the European Union since 2008. To support international harmonization and reduce trade barriers, the system will also be introduced and made legally binding in Switzerland. It is already in use for commercial products and is expected to be introduced for consumer products by the end of 2010. Thus, following the intro-

duction of the new chemicals law in 2005 yet another system change is to be implemented in Switzerland. In addition to new danger symbols («pictograms») the GHS will also introduce a new nomenclature. Signal words such as «danger» or «warning» will be in use as well as new hazard phrases (H-phrases) and safety instructions, so-called P-phrases (P standing for «precaution»). This is a challenge not only for the competent authority, but also for the STIC since experts and the general public will have to be informed about these changes in a joint and coordinated effort to ensure that the system change does not adversely affect chemical safety.

The **Cassis de Dijon Principle** (products from the European Economic Area are allowed in Switzerland as a matter of principle): Introduced in Switzerland on 1 June 2010, this principle does not apply to products requiring registration such as pharmaceuticals, agrochemicals and biocides. However, it does apply to chemicals and mixtures with the exception of new substances requiring registration. Since EU regulations for these chemicals are more or less identical to Swiss law, the only real change for consumers and employees is that labelling is now allowed in the language of the place where the product is originally sold, whereas previously two official languages were required.

Figure 1  
**Exposure to phosphides**  
**Incidents and number of patients involved per annum**





## 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 data base, and are analysed in the Annual Report.

### Overview of all calls

#### Use of the service

In 2009, the information service of the STIC received 34 022 enquiries which represents an increase of 1.97 % compared to the previous year.

Figure 1

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

2000	30 935
2001	32 330
2002	33 111
2003	32 217
2004	31 404
2005	33 512
2006	31 184
2007	31 933
2008	33 366
2009	34 022

#### Origin of calls

Table 1 shows the number of calls received in 2009 from the individual cantons of Switzerland and the different population groups.

The largest number of calls came from the general public (66.3 %). 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 (4.3 per 1 000 inhabitants). The smallest number of calls was received from the cantons of Tessin, Nidwalden and Jura.

Physicians used our service 8 608 (25.3 %) times. Compared to the year 2008 calls made by hospital physicians decreased by 270. Calls by general practitioners also decreased by 111. Veterinarians accounted for 673 calls to the STIC. Based on population, the largest proportion of physician calls came from the cantons of Basel-Stadt and Jura, followed by the cantons of Zurich and Schaffhausen. Pharmacists submitted 583 inquiries to the STIC.

The STIC answered 122 requests for information from the media (newspapers, radio and television). 1 494 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 2009 by cantons and population groups

Canton	Population	General public	Hospital doctors	Practitioners	Veterinarians	Pharmacists	Various	Total	Calls / 1000 Public	Inhabitants Physicians
AG	591 632	1 681	586	73	39	50	110	2 539	2.9	1.2
AI	15 549	33	7	8	1	1	3	53	2.1	1.0
AR	53 054	117	30	8	5	4	5	169	2.2	0.8
BE	969 299	3 110	798	198	93	86	230	4 515	3.2	1.1
BL	271 214	782	193	54	29	22	45	1 125	2.9	1.0
BS	186 672	571	293	44	9	31	53	1 001	3.1	1.9
FR	268 537	673	216	28	16	14	36	983	2.6	1.0
GE	446 106	1 000	386	75	22	51	54	1 588	2.3	1.1
GL	38 370	86	37	11	3	–	2	139	2.2	1.3
GR	190 459	508	154	49	13	6	26	756	2.7	1.1
JU	69 822	140	103	12	1	6	8	270	2.0	1.7
LU	368 742	944	302	46	23	9	83	1 407	2.6	1.0
NE	170 924	362	140	17	13	16	21	569	2.1	1.0
NW	40 737	78	17	7	3	1	5	111	1.9	0.7
OW	34 429	83	22	7	1	1	3	117	2.4	0.9
SG	417 152	1 189	389	124	37	20	103	1 862	2.6	1.2
SH	75 303	210	78	17	10	4	17	336	2.8	1.4
SO	251 830	619	101	41	19	5	41	826	2.5	0.6
SZ	143 719	333	94	26	8	1	14	476	2.4	0.9
TG	241 811	569	212	39	34	5	45	904	2.4	1.2
TI	332 736	431	367	33	19	14	33	897	1.3	1.3
UR	35 162	113	15	4	1	3	6	142	3.2	0.6
VD	688 245	1 668	558	98	50	62	108	2 544	2.5	1.1
VS	303 241	673	164	37	24	31	32	961	2.3	0.8
ZG	110 384	291	59	19	8	4	21	402	2.7	0.8
ZH	1 332 727	5 581	1 345	318	141	129	458	7 972	4.3	1.4
FL	35 589	82	16	13	–	1	7	119	2.3	0.8
Ausl.	–	249	483	20	51	2	38	843	–	–
Unbek.	–	364	–	17	–	4	11	396	–	–
<b>Total</b>	<b>7 737 445</b>	<b>22 540</b>	<b>7 165</b>	<b>1 443</b>	<b>673</b>	<b>583</b>	<b>1 618</b>	<b>34 022</b>	<b>3.0</b>	<b>1.2</b>
%	–	66.3	21.1	4.2	2.0	1.7	4.8	100	–	–

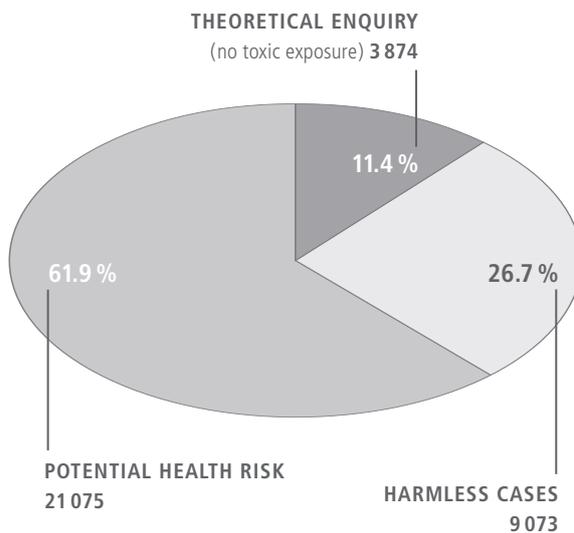


### Types of calls

Calls can be sub-divided into enquiries without exposure and enquiries where exposure has taken place. In cases of exposure we differentiate between harmless situations where no or no relevant symptoms are to be expected, and cases of potential or definite health risk.

Figure 2

Types of calls (n = 34 022)



Among the 3 874 calls (compared to 4 180 in the previous year, -7.32 %) 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 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 30 148 calls received following potentially toxic exposure concerned 28 677 humans (compared to 27 802 in the previous year, +3.15 %) and 1 471 animals (compared to 1 384, +6.29 %). 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 potentially toxic exposure (28 677). Children were involved in 56.2 % of the cases, adults in 43.6 %. In 59 cases (0.2 %), the age group remained unknown.

The highest number of calls involved children below five years of age (46.1 %). The proportion of harmless cases was significantly higher in children (24.3 %) than in adults (6.3 %). In contrast, the proportion of cases with potential health risk was somewhat higher in adults (37.3 %) than in children (31.9 %). Boys were more frequently represented amongst the children (28.3 % vs. 25 %) and women amongst the adults (25.3 % vs. 17.1 %).

Table 2

**Age and gender of human cases with potentially toxic exposure**

		Harmless cases		Potential health risk		Total	
<b>Children</b>		<b>6 976</b>	<b>24.3%</b>	<b>9 140</b>	<b>31.9%</b>	<b>16 116</b>	<b>56.2%</b>
Age	< 5 years	6 026	21.0%	7 193	25.1%	13 219	46.1%
	5 – < 10 years	485	1.7%	797	2.8%	1 282	4.5%
	10 – < 16 years	178	0.6%	695	2.4%	873	3.0%
	unknown	287	1.0%	455	1.6%	742	2.6%
Sex	girls	3 132	10.9%	4 048	14.1%	7 180	25.0%
	boys	3 478	12.1%	4 626	16.1%	8 104	28.3%
	unknown	366	1.3%	466	1.6%	832	2.9%
<b>Adults</b>		<b>1 794</b>	<b>6.3%</b>	<b>10 708</b>	<b>37.3%</b>	<b>12 502</b>	<b>43.6%</b>
Sex	female	1 121	3.9%	6 147	21.4%	7 268	25.3%
	male	602	2.1%	4 306	15.0%	4 908	17.1%
	unknown	71	0.2%	255	0.9%	326	1.1%
<b>Unknown</b>		<b>15</b>	<b>0.1%</b>	<b>44</b>	<b>0.2%</b>	<b>59</b>	<b>0.2%</b>
<b>Total</b>		<b>8 785</b>	<b>30.6%</b>	<b>19 892</b>	<b>69.4%</b>	<b>28 677</b>	<b>100%</b>

**Circumstances of poisoning**

Table 3 shows the circumstances of poisoning in the 28 677 cases with potentially toxic exposure. **Acute accidental intoxications** (22 409, compared to 21 378 in the previous year, +4.82 %) represented the largest group. These occurred frequently at home with children ingesting easily accessible household products, pharmaceuticals, or plant parts. Adults too were involved in toxic exposures at home, but a significant number of enquiries also involved work place accidents (945).

**Acute intentional poisoning** was mostly due to attempted suicide (3 681 cases, compared to 3 864 in the previous year, –4.74 %), less frequently due to drug abuse (450 cases), poisoning incidents in connection with criminal actions however increased slightly (106 cases, previous year 91).

**Chronic poisoning** was relatively rare (725 cases) compared to acute intoxications. **Adverse drug reactions** in therapeutic doses led to 212 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	20 509	71.5 %	290	1.0 %
Accidental occupational	945	3.3 %	76	0.3 %
Accidental environmental	21	0.1 %	20	0.07 %
Accidental others	934	3.3 %	58	0.2 %
<b>Total accidental</b>	<b>22 409</b>	<b>78.1 %</b>	<b>444</b>	<b>1.5 %</b>
Intentional suicide	3 681	12.8 %	49	0.2 %
Intentional abuse	450	1.6 %	69	0.2 %
Intentional criminal	106	0.4 %	10	0.03 %
Intentional others	845	2.9 %	153	0.5 %
<b>Total intentional</b>	<b>5 082</b>	<b>17.7 %</b>	<b>281</b>	<b>1.0 %</b>
<b>Total accidental and intentional</b>	<b>27 491</b>	<b>95.9 %</b>	<b>725</b>	<b>2.5 %</b>
<b>Total acute and chronic</b>		<b>28 216</b>	<b>98.4 %</b>	
<b>Adverse drug reactions</b>		<b>212</b>	<b>0.7 %</b>	
<b>Unclassifiable</b>		<b>249</b>	<b>0.9 %</b>	
<b>Total</b>		<b>28 677</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 28 677 poisonings in humans.

Most toxic exposures occurred with pharmaceuticals (36.3 %), followed by household products (25.9 %) and plants (11.0 %). Details of the individual agent groups are available in a supplement to this Annual Report which can be ordered separately.

### Severity of poisonings

6 591 enquiries from physicians (76.6 % 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 72.8 % of these cases. Thus the STIC received additional information, evaluated by 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	5 481	4 927	7	10 415	36.3%
Household products	2 321	5 089	18	7 428	25.9%
Plants	541	2 616	3	3 160	11.0%
Technical and industrial products	1 323	415	7	1 745	6.1%
Cosmetics and personal care products	205	1 291	2	1 498	5.2%
Food and beverages	633	412	7	1 052	3.7%
Recreational drugs, alcohol	439	455	1	895	3.1%
Agricultural and horticultural products	382	335	3	720	2.5%
Venomous animals	275	119	3	397	1.4%
Mushrooms	215	143	3	361	1.3%
Veterinary drugs	50	47	–	97	0.3%
Others and unknown agents	637	267	5	909	3.2%
<b>Total</b>	<b>12 502</b>	<b>16 116</b>	<b>59</b>	<b>28 677</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 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.

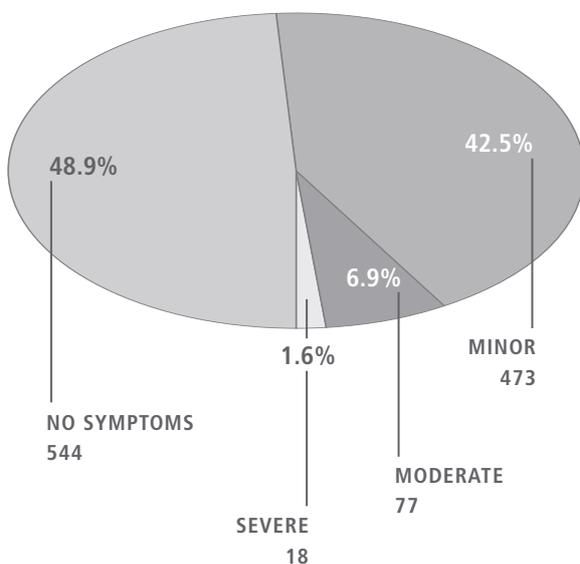
4 266 human cases both asymptomatic and symptomatic with sufficient evidence of causality were analysed further with regard to clinical course.

1 112 cases involved children and 3 154 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.

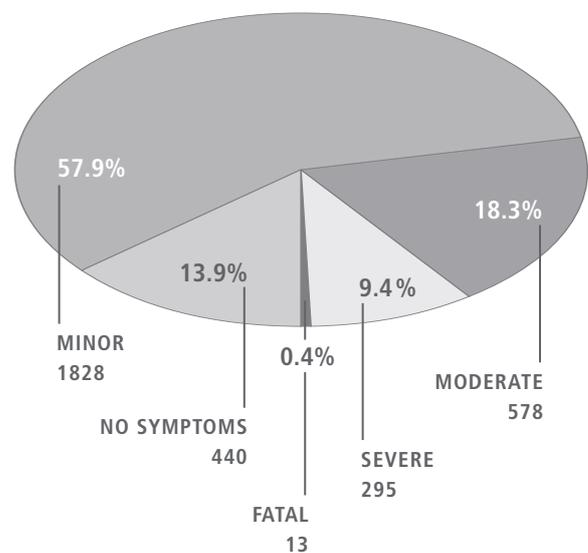


Figure 3  
**Clinical outcome of poisoning cases in children and adults**

**Children (n = 1 112)**



**Adults (n = 3 154)**



Amongst children, half of the cases (544 = 48.9%) were asymptomatic in contrast to adults where only 440 (13.9%) were asymptomatic. Minor symptoms were observed in 473 children (42.5%) and in 1828 adults (57.9%). Moderate symptoms were seen in 77 children (6.9%) and 578 adults (18.3%). Severe poisoning occurred in 18 children (1.6%) and 295 adults (9.4%). 13 cases in adults had a fatal outcome (0.4%).

Of the 4 266 cases where causality was confirmed or likely (Table 5), about three fifths involved 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 (64.0%), followed by household products (10.5%) and technical and industrial products (7.7%).

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	344	1 174	382	218	10	315	228	46	15	–	2 732	64.0%
Household products	25	165	25	8	–	103	114	9	–	–	449	10.5%
Technical and industrial products	25	206	36	12	1	10	34	3	1	–	328	7.7%
Recreational drugs, alcohol	12	95	77	43	–	10	17	10	2	–	266	6.2%
Plants	5	28	24	3	–	50	9	2	–	–	121	2.8%
Mushrooms	5	21	15	2	1	15	7	–	–	–	66	1.5%
Cosmetics and personal care products	9	8	–	–	–	13	23	2	–	–	55	1.3%
Venomous animals	–	24	6	3	–	4	11	3	–	–	51	1.2%
Agricultural and horticultural products	5	22	–	3	–	7	5	1	–	–	43	1.0%
Food and beverages	2	9	2	–	–	6	8	1	–	–	28	0.7%
Veterinary drugs	2	10	–	1	–	4	–	–	–	–	17	0.4%
Others or unknown agents	6	66	11	2	1	7	17	–	–	–	110	2.6%
<b>Total</b>	<b>440</b>	<b>1 828</b>	<b>578</b>	<b>295</b>	<b>13</b>	<b>544</b>	<b>473</b>	<b>77</b>	<b>18</b>	<b>0</b>	<b>4 266</b>	<b>100%</b>

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



## Animal poisoning

### Animals involved

The 1471 calls received concerned the following animal species: 958 dogs, 352 cats, 54 equine animals (horses, ponies, donkeys), 36 bovine animals (calves, cows, cattle, sheep, goats), 31 rodents (degus, hares/rabbits), 9 guinea pigs, 14 birds (parrots, canaries, cockatoos, pigeons, quails, budgerigars), 3 reptiles (tortoises, snakes, lizards), 1 fish, 3 pigs, 2 chickens, 3 alpacas, 1 deer, 1 monkey. 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 calls concerning animals

Agent groups	No. of cases	
Plants	372	25.3 %
Agricultural and horticultural products	255	17.3 %
Human pharmaceuticals	241	16.4 %
Household products	195	13.3 %
Food and beverages	114	7.7 %
Veterinary drugs	108	7.3 %
Technical and industrial products	41	2.8 %
Venomous animals	20	1.4 %
Recreational drugs, alcohol	18	1.2 %
Cosmetics and personal care products	15	1.0 %
Mushrooms	13	0.9 %
Others or unknown agents	79	5.4 %
<b>Total</b>	<b>1 471</b>	<b>100 %</b>

The calls primarily concerned plants (25.3 %) followed with decreasing frequency by calls relating to agricultural and horticultural products (17.3 %), pharmaceuticals (16.4 %), household products (13.3 %), food and beverages (7.7 %) as well as veterinary drugs (7.3 %).

## Severity of poisonings

Veterinarians were also requested to submit clinical reports on animal poisoning. We received a total of 285 reports which could be analysed. Of those 125 cases remained without symptoms, 94 were classified as minor and 66 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	35	20	9	2	–	66	23.2%
Plants	22	17	8	1	2	50	17.5%
Agricultural and horticultural products	23	10	7	5	3	48	16.8%
Veterinary products	15	12	7	8	1	43	15.1%
Household products	12	13	3	1	–	29	10.2%
Food and beverages	7	10	3	–	–	20	7.0%
Technical and industrial products	6	1	1	1	–	9	3.2%
Recreational drugs, alcohol	1	5	1	–	–	7	2.5%
Venomous animals	–	3	1	–	–	4	1.4%
Cosmetics and personal care products	2	2	–	–	–	4	1.4%
Mushrooms	1	1	1	–	–	3	1.1%
Others or unknown agents	1	–	1	–	–	2	0.7%
<b>Total</b>	<b>125</b>	<b>94</b>	<b>42</b>	<b>18</b>	<b>6</b>	<b>285</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 8 280 pamphlets.

The fee-for-service doping hotline for athletes whose establishment was mandated by Swiss Olympic was utilised 297 times.

The web site was visited 153 143 times (previous year 144 498). Hit rates have thus increased slightly.

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 continues to participate regularly and actively in the joint continuing education activities in clinical pharmacology and toxicology.

H. Kupferschmidt contributes to the training of medical students as a lecturer in the subject of special clinical toxicology

(3<sup>rd</sup> year) and in the module emergency medicine (4<sup>th</sup> year). 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 annually in collaboration with the Zurich Emergency Services and the half day seminar for nurses taking place four times a year at the education centre of the University Hospital Zurich.

Six papers were presented at the annual congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) in Stockholm. H. Kupferschmidt was invited to present a keynote lecture on evidence-based clinical toxicology at the EUROTOX Congress in Dresden. He also acted as guest editor for a special issue of «Therapeutische Umschau» on acute poisonings, in which four of the contributions originated from the STIC. J. Kupper published a book on plants toxic to small and domestic animals. A chapter entitled «Toxicity data from human studies» by Martin Wilks and Hugo Kupferschmidt was published in «General and Applied Toxicology» by Ballantine, B et al.

### Research projects

The main focus of the STIC's research efforts continues to be dose-effect relationships in human poisonings, in particular relating to drug overdose. The doctoral thesis on comparative toxicity of citalopram and escitalopram was completed. Work commenced on a study commissioned by the Federal Office of Public Health (FOPH) to determine the economic cost of domestic accidents with chemical products. The STIC leads the European multi-centre study on eye exposure to automated dishwasher detergents (MAGAM). The three year study entitled «Multicentre Data Collection in European Poison Centres Using Paraquat as an Example» was completed. H. Kupferschmidt represents 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 which will result in a Rapid Alerting System for

Chemical Releases (RAS-CHEM). 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). A study to investigate misuse of stimulants in Switzerland was performed in collaboration with the Department of Clinical Pharmacology and Toxicology of the University of Basle and the Swiss Centre for Applied Human Toxicology (SCAHT).

### 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 Universities of Basle and Zurich (XeRR) 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 particularly 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.

Within the framework of collaboration with the CBRN-Laboratory Spiez and the Coordinated Medical Services (KSD) the STIC has been developing an eLearning Module on the subject of «Medical CBRN-protection». In addition, the STIC organised for the first time the «Advanced Hazmat Life Support» (AHL) 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 of the Society for Clinical Toxicology representing German-speaking poison centres whose current president is A. Stürer. The STIC is also represented in the Executive Committee of the European Association of Poison Centres and Clinical Toxicologists (EAPCCT). H. Kupferschmidt has been president of the association from 2008 until 2010 and in addition has been the association's webmaster for several years now.



## ■ 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 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 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 2010:** Calcium gluconate hydrogel is being moved from basic stock held at high street pharmacies to basic stock available at hospitals with emergency medicine departments since it is very rarely requested from high street pharmacies and is used either on site (in companies working with hydrofluoric acid where it should always be available for use as an emergency antidote) or in hospital emergency departments. Neostigmin is only rarely used to treat intoxications and has now been taken off the antidote list. Dexrazoxane has been used for over 25 years against anthracycline-induced cardiac toxicity in oncology wards and is also effective to treat accidental extravasation injuries. The list of antidotes lists the availability of dexrazoxane since it is not kept in stock by all regional centres. The antidote stock held at the armed forces pharmacy has now been added to the list of antidotes. A reference to the antidote list and the availability of antidotes has been added to the Swiss Compendium of Medicinal Drugs in 2010.

**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. 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, magnesium, N-acetylcysteine (vials), naloxone, sodium bicarbonate, sodium polystyrene sulfonate, phytomenadione (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, 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.toxi.ch](http://www.toxi.ch)).

The armed forces pharmacy has botulism and diphtheria antitoxins available as well as antidotes for major events. They can be obtained via the STIC.

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.

Availability and supply of radionuclide-antidotes is still being reconsidered and reorganised.

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.toxi.ch](http://www.toxi.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

### Arzneimittelinteraktionen mit antiretroviralen Medikamenten.

Ceschi A, Curkovic I, Kirchheiner J, Kullak-Ublick GA, Jetter A. Internist 2009; (12): 1–6.

### Von Hanf bis Schokolade: Tiervergiftungen im Wandel der Zeit.

Curti R, Kupper J, Kupferschmidt H, Naegeli H. Schweiz Arch Tierheilkd 2009; 151: 265–73.

### The toxicological documentation and information network in Germany – 2 years experience of automatic product data exchange between companies, national authorities and poisons centres. [abstract]

Desel H, Ganzert M, Cordes Tillmann, Butschke A, Hahn A, Hüller G, Stürer A. Clin Toxicol 2009; 47: 470.

### Pilzvergiftungen – die Schattenseiten des Myzetismus.

Flammer R, Schenk-Jäger KM. Ther Umsch 2009; 66: 357–64.

### Prevalence of nuclear cataract in Swiss veal calves and its possible association with mobile telephone antenna base stations.

Hässig M, Jud F, Naegeli H, Kupper J, Spiess BM. Schweiz Arch Tierheilkd 2009; 151: 471–8.

### Antidota bei Vergiftungen 2009.

Kupferschmidt H. GSASA Journal 2009; 23: 6–8.

### Antidote bei Vergiftungen 2009.

Kupferschmidt H. PharmaJournal 2009; 146(8): 5–6.

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Kupferschmidt H. Schweiz Aerztezeitg 2009; 90: 749–50.

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Kupferschmidt H, Züst A, Rauber-Lüthy Ch. Ther Umsch 2009; 66: 331–4.

### Intoxikationen.

Kupferschmidt H. Ther Umsch 2009; 66: 321.

### Overview on evidence based clinical toxicology. [abstract]

Kupferschmidt H. Toxicol Lett 2009; 189S: S45.

### Poisoning in patients with eating disorders and nutritional abnormalities. [abstract]

Kupferschmidt H. Clin Toxicol 2009; 47: 438.

### Vergiftungen in der Schweiz.

Kupferschmidt H. Schweiz Aerztezeitg 2009; 90: 1740–3.

### Welche ABC-Ereignisse können aus der Sicht des Tox-Zentrums überhaupt geschehen?

Kupferschmidt H. Schweiz Zeitschr Milit Katastrophenmed 2009; 27(4): 35–7.

### Giftige Pflanzen für Klein- und Heimtiere.

Kupper J, Demuth DC. Enke Verlag, Stuttgart 2009, 288 S., ISBN 978-3-8304-1034-8

### Praxisrelevante Vergiftungen bei Pferden.

Kupper J, Naegeli H. Vet. Med. Report, Organ für tierärztliche Fortbildungskongresse, bpt-Kongress 2009, 1. bis 4. Oktober in Nürnberg: 4, 2009.

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Kupper J, Hanselmann K, Naegeli H. Der Praktische Tierarzt 2009; 90: 162–5.

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### Vergiftungen beim Kind, mit besonderer Berücksichtigung der Haushaltprodukte.

Rauber-Lüthy Ch, Staubli G. Ther Umsch 2009; 66: 373–8.

### To be continued: The ASHT II Project. [abstract]

Schaper A, Coleman G, Desel H, Edwards N, Dragelyte G, Duarte-Davidson R, Kupferschmidt H, Mathieu-Nolf M, Orford R, Pelclova D, Siemon W, Wyke S. Clin Toxicol 2009; 47: 470.

### Das Pilzjahr 2008.

Schenk-Jäger KM. SZP – Schweiz Zeitschr Pilzkd 2009; (3): 118–9.

### Monkshood (Aconitum sp.): Survival despite high blood levels: Role of early treatment and prolonged resuscitation. [abstract]

Schenk-Jaeger KM, Kupper J, Freiburghaus D, Kupferschmidt H, Rauber-Lüthy C. Clin Toxicol 2009; 47: 473.

### Periskop 23.

Schenk-Jäger KM. SZP – Schweiz Zeitschr Pilzkd 2009; (4): 149–50.

### Zunahme der Vergiftungen nach Konsum von Röhrlingen!

Schenk-Jäger KM. SZP – Schweiz Zeitschr Pilzkd 2009; (2): 66–7.

### Do detergents cause corrosive eye lesions? A multinational analysis of data from 11 poisons centres within the scope of GHS – Results on feasibility and frequency of exposure. [abstract]

Stürer A, Seidel C, Sauer O, Zilker T, Koch I, Hermanns-Clausen M, Hruby K, Hüller G, Heppner HJ, Tutdibi E, Desel H. Clin Toxicol 2009; 47: 476.

### The TDI categorization system for agents (Toxicological Documentation and Information Network – Germany): Current use – developments – new version. [abstract]

Stürer A, Begemann K, Binscheck T, Eckart D, Lüde S, Reinecke HJ, Sauer O, Seidel C, Stedtler U, Wagner R, Weilemann I, Zeimentz H, Hüller G. Clin Toxicol 2009; 47: 477.

### Toxicity data from human studies.

Wilks MF, Kupferschmidt H. In: Ballantyne B, Marrs TC, Syversen T (eds.). General and Applied Toxicology, 3rd ed. John Wiley & Sons, Chichester 2009. p. 824–846.

### Accidental intakes of remedies from complementary and alternative medicine in children-analysis of data from the Swiss Toxicological Information Centre.

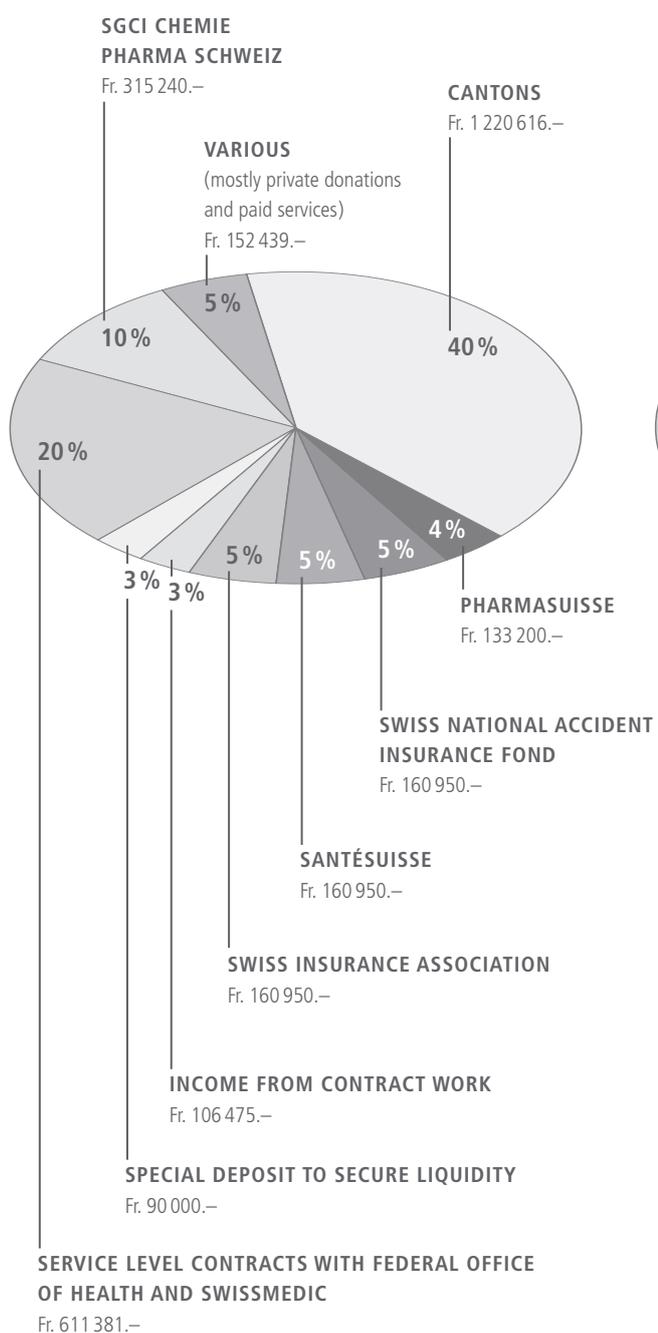
Zuzak TJ, Rauber-Lüthy Ch, Simões-Wüst AP. Eur J Pediatr 2009; 169: 681–8.

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).

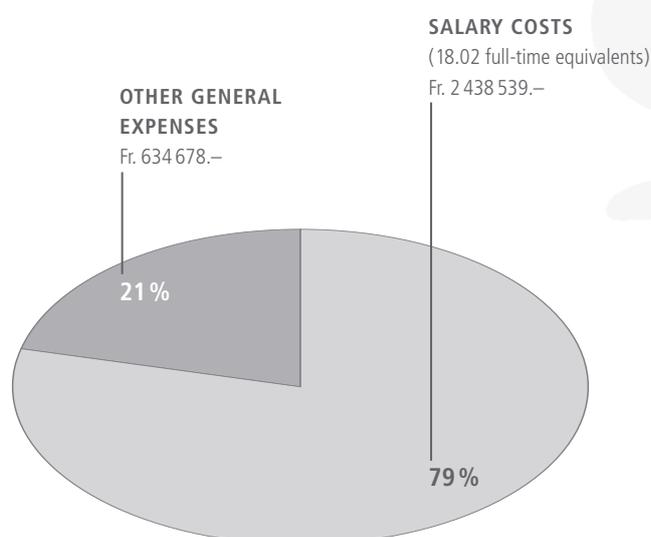
In addition, the revised leaflet about first aid and poisoning prevention is available as well as emergency telephone number stickers in German, French and Italian. Dissertations are only available on loan.

## Income and expenditure

Income Fr. 3 112 201.–



Expenditure Fr. 3 073 217.–





## Donations

Ernst Göhner Stiftung	10 000
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- the Swiss Society of Pharmacists (pharmaSuisse)
- the SGCI Chemie Pharma Schweiz
- the Swiss National Accident Insurance Fund (SNAIF)
- the Swiss Insurance Association (SIA)
- the 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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## Advisers

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).

## Staff

Natascha Anders, nurse

Alexandra Bloch, dipl. pharm.

Marcel Bruggisser, M.D. (until 28.2.2009)

Danièle Chanson, executive secretary

Colette Degrandi, M.D.

Anja Dessauvagie, med. pract. (as of 1.2.2009)

Katrin Faber, M.D.

Elmira Far, med. pract. (until 31.5.2009)

Joanna Farmakis, cleaning service

Joan Fuchs, med. pract.

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Jolanda Tremp, secretary

Sonja Tscherry, nurse

Margot von Dechend, M.D.

Zeynep Yilmaz, cand. med. dent. (until 31.1.2009)

Responsible for information technology:

Daniel Küenzi, Inf.Ing. HTL, Software-Entwicklungs GmbH, Bülach.

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Swiss Toxicological  
Information Centre

24-h-Emergency Service +41 44 251 51 51

Non urgent cases +41 44 251 66 66

Fax +41 44 252 88 33

Freiestrasse 16

CH-8032 Zurich

PC 80-26074-7

Internet: [www.toxi.ch](http://www.toxi.ch)

eMail: [info@toxi.ch](mailto:info@toxi.ch)