



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

# **Annual Report** **1999**



## Support

The Swiss Toxicological Information Centre (STIC) is supported by a private foundation for public benefit, as well as by the Swiss Cantons.

The traditional supporting organizations are:

- the Swiss Society of Pharmacists
- the Swiss Society of Chemical Industries.

Additional substantial aid comes from:

- the Swiss National Accident Insurance Fund
- the Swiss Insurance Association
- the Association of Swiss Health Insurance Companies.

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## Advisers

Numerous specialists, mainly from hospitals, institutes and state as well as federal offices act as honorary advisers.

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## Editorial

Dear readers, dear friends of the "Tox"

The beginning of the new millenium is also the time for a new start for the "Tox": after 23 years, we have moved into new, larger facilities. We brought with us the best of what we had, and placed it in a new, open environment. New and fascinating challenges are waiting ahead: the doping hotline for the Swiss Olympic Sport Association is just one example.

Our spirit of entreprise is reflected also by the new image of the "Tox" with its new logo. Our aims, namely effective service to all, as well as our means remain the same. However, our methods, and our environment are changing. The vicinity of the university hospital and the academic contacts are gratifying, and we look forward to many fruitful collaborations.

A great loss in 1999 was the retirement of our vice-president Dr. Rudolf Ulrich (SSCI), who has been an important supporter of the "Tox" for many years. His successor, Dr. Dieter Grauer (SSCI), will have to fill a big gap, and is welcomed warmly.

Our thanks go again to all our donors and readers. Stay with us in the future! Cordially yours

Dr. Franz Merki, President



## 2 Introduction

The relocation of the Centre in 1999 caused no interruption in the provision of services, thanks to the increased commitment of the staff. Almost 30'000 calls have been handled, as in the five previous years. The new location, provided by the university of Zurich, allows an improved cooperation with the emergency and intensive care units of the university hospital. Thus, an increased competence in clinical toxicology has emerged at the "Tox". On the other hand, the university and its hospital can profit from a nationally and internationally recognized institution, specialized in chemical and pharmaceutical safety. This is a mutually beneficial situation, which must be exploited by developing synergies with complementary academic institutions and by establishing interactive educational networks.

This annual report 1999 is based entirely upon electronical data collection and evaluation. Our internal database, "Toxi", now includes internationally coordinated classifications and scoring criteria, as well as new standards of data processing and quality assurance.

The therapeutic drugs have been classified according to the ATC code used in many countries, and the pharmaceutical substances according to a closely related scheme. The classification of the circumstances of poisoning, the assessment of causality of symptoms and the scoring of poisoning severity occurred in accordance with the Poisoning Severity Score of the European Association of Poison Centres and Clinical Toxicologists (EAPCCT) and the WHO. These criteria, together with the standardized evaluation of medical reports provided by the treating physicians, are the basis of quality-oriented information on poisoning in Switzerland and permit comparison with international data. However, a complete epidemiology of poisoning is not possible on the basis of a spontaneous reporting system alone.

A particular aim of the data evaluation by the STIC is the determination of critical dose limits for the

development of moderate and severe symptoms of toxicity. By this means, the risk assessment of poisoning can be continuously improved, thus rendering the advice on prognosis and therapeutic alternatives given to callers more reliable. This can be accomplished only with the collaboration of the treating physicians who feed the database of the STIC with comprehensive and detailed clinical data. This information forms the basis of our knowledge of the specific toxicity of various poisons and their risk. The collaboration between Swiss physicians and the STIC has a 30-year-old tradition and is appreciated very much by the STIC. The data collected to date have led to the prevention of unnecessary hospitalization and procedures in a considerable number of cases, thereby contributing to the reduction of health care costs. We hope that in the future, physicians and pharmacists will continue to contribute to our clinical toxicological data base, and thus to help to further improve prevention, risk assessment, and therapy of acute and chronic poisonings, and to enhance chemical and pharmaceutical safety in Switzerland.



### 3 Emergency and information service

The central services of the STIC are the consultations on the phone for laypeople and physicians in case of acute and chronic poisoning. Additionally, the centre also answers theoretical questions and makes an important effort in the prevention of accidental poisoning.

The data have been standardized with respect to the causality of symptoms, the circumstances of poisoning and the disease severity. The corresponding definitions have been published in the annual report 1998. They apply also, without modification, to the present report.

#### 3.1 Methods

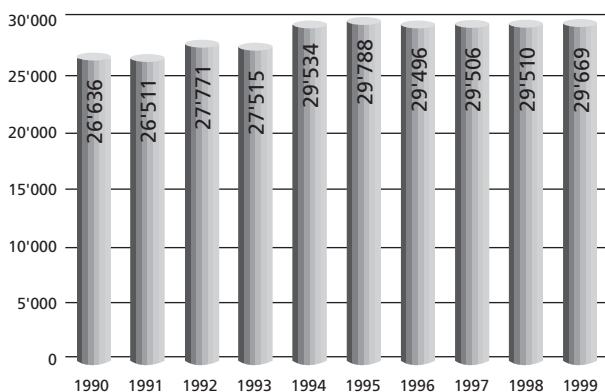
All calls to the information service of the STIC are registered electronically. If there is a potential danger for a patient, the informations provided to physicians and veterinarians are confirmed in writing, together with a request for a feed-back on a standardized form. By this means the STIC obtains medically evaluated informations on symptoms, treatment and outcome of cases with acute and chronic poisoning. These data are then incorporated in a structured manner into the in-house database ("Toxi").

#### 3.2 Call statistics

##### Use of the service

In 1999, the information service of the STIC has been called 29'669 times, which represents an increase of 0.5 % over the previous year. We thus see a practically constant workload during the last six years, with a little less than 30'000 calls per year.

**Fig. 1 Frequency of calls to the centre**





**Tab. 1 Origin of calls**

Table 1 shows the geographical and professional origin of the calls.

Canton	Number of inhabitants	General Public	Hospitals	Practitioners	Veterinarians	Pharmacies	Various organizations	Total	Calls per 1'000 inhabitants	
									Public	Physicians
AG	539'500	1'249	404	132	35	42	67	1'929	2.3	1.0
AI	14'900	24	-	3	-	-	-	27	1.6	0.2
AR	53'700	98	37	15	7	-	2	159	1.8	1.0
BE	944'300	2'435	699	297	99	67	163	3'760	2.6	1.1
BL	258'500	523	152	83	28	6	30	822	2.0	0.9
BS	188'300	511	286	60	7	19	57	940	2.7	1.8
FR	234'200	427	245	46	20	26	22	786	1.8	1.2
GE	401'900	872	561	96	18	45	54	1'646	2.2	1.6
GL	38'700	71	18	15	-	2	2	108	1.8	0.9
GR	186'800	381	112	60	13	9	22	597	2.0	0.9
JU	68'900	81	95	14	5	8	6	209	1.2	1.6
LU	344'400	697	224	134	21	9	58	1'143	2.0	1.0
NE	165'800	373	194	39	20	34	31	691	2.2	1.4
NW	37'400	49	6	11	2	1	2	71	1.3	0.5
OW	32'200	50	18	12	3	1	1	85	1.6	0.9
SG	446'400	959	304	144	25	17	70	1'519	2.1	1.0
SH	73'800	171	85	18	9	2	18	303	2.3	1.4
SO	245'400	508	144	63	21	4	20	760	2.1	0.8
SZ	128'000	239	58	38	6	6	6	353	1.9	0.8
TG	227'900	497	140	81	17	6	29	770	2.2	1.0
TI	308'100	410	300	59	11	19	40	839	1.3	1.2
UR	35'500	56	14	11	1	-	1	83	1.6	0.7
VD	614'800	1'455	570	144	58	59	87	2'373	2.4	1.2
VS	276'000	418	223	81	12	26	20	780	1.5	1.1
ZG	98'000	242	58	21	5	2	20	348	2.5	0.8
ZH	1'197'000	5'265	1'210	476	104	99	420	7'574	4.4	1.4
FL	32'015	62	10	14	-	1	6	93	1.9	0.8
Foreign	-	177	348	40	7	2	68	642	-	-
Unkn.	-	218	7	13	3	3	15	259	-	-
<b>Total</b>	<b>7'192'415</b>	<b>18'518</b>	<b>6'522</b>	<b>2'220</b>	<b>557</b>	<b>515</b>	<b>1'337</b>	<b>29'669</b>	-	-
%	-	62.4	22.0	7.5	1.9	1.7	4.5	100	-	-



The largest part of the calls (62.4 %) came from laypersons. These calls reflect not only an important information need of the population, but also mirror the degree of popularity of the "Tox" at different places. The largest proportion of public calls originated from the canton of Zurich (4.4 per 1'000 inhabitants), followed, in decreasing order, by the cantons of Basel-Stadt, Bern, Zug and Schaffhausen. The cantons with a public call frequency clearly below average are Ticino, Nidwalden and Jura.

Physicians used our service 8'742 times, veterinarians 557 times. There was again a slight increase of the calls from hospital physicians (1998: 6'406; 1999: 6'522), and a slight decrease of the calls from practitioners (1998: 2'264; 1999: 2'220). The largest proportion of calls from physicians per 1'000 inhabitants occurred in the canton of Basel-Stadt, followed by Genève and Jura. Hence, the centre is much better known by the physicians than by the public in the canton of Jura.

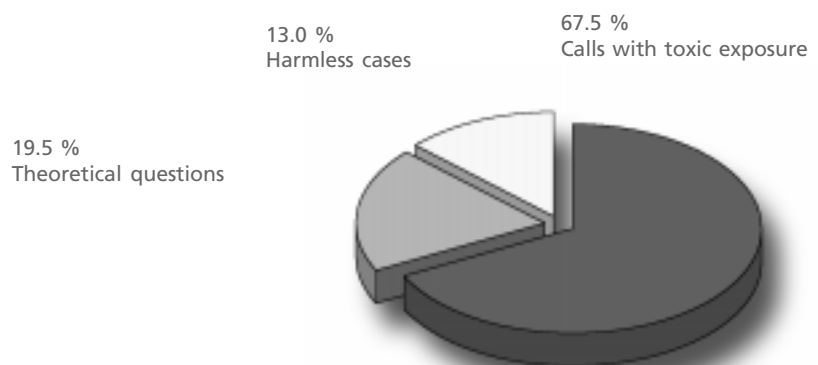
Pharmacists called our centre 515 times. From other organizations (media, emergency services, firms etc.), there were 1'337 information requests.

### Types of calls

Among the 5'777 calls without toxic exposure, frequent questions pertained to drugs and their interactions, the toxicity of plants and other biological products, and the risks of household products for small children. Also prominent in this group were advices and documentations for authorities, media, individuals and various organizations.

The 23'892 calls following toxic exposure concerned 22'905 humans and 987 animals. The calls concerning animals are excluded from the following tables and discussed separately in chapter 3.4.

**Fig. 2 Types of calls (n=29'669)**





### 3.3 Human poisoning

The calls with toxic exposure (22'905) are presented by age and gender in table 2. Children were concerned in 53.4 % of the cases, adults in 46.1 %. In 108 cases (0.5 %), the age group remained unknown.

The most frequent incidents concerned children under five years of age. The proportion of harmless cases was significantly higher in children (13.1 %) than in adults (3.3 %). In contrast, the proportion of

potentially severe cases was somewhat higher in adults (42.8 %) than in children (40.3 %). Boys predominated among the children (23.5 % vs. 21.2 %), women among the adults (24.6 % vs. 16.8 %).

**Tab. 2 Age and gender of human cases with toxic exposure**

Age		Harmless cases		Potentially severe cases		Total	
<b>Children</b>		<b>2'993</b>	<b>(13.1 %)</b>	<b>9'237</b>	<b>(40.3 %)</b>	<b>12'230</b>	<b>(53.4 %)</b>
Age	< 5 years	2'407	(10.6 %)	6'974	(30.5 %)	9'381	(41.1 %)
	5 - <10 years	192	(0.8 %)	705	(3.1 %)	897	(3.9 %)
	10 - <16 years	68	(0.3 %)	613	(2.6 %)	681	(2.9 %)
	unknown	326	(1.4 %)	945	(4.1 %)	1'271	(5.5 %)
Sex	girls	1'201	(5.3 %)	3'650	(15.9 %)	4'851	(21.2 %)
	boys	1'312	(5.7 %)	4'070	(17.8 %)	5'382	(23.5 %)
	unknown	480	(2.1 %)	1'517	(6.6 %)	1'997	(8.7 %)
<b>Adults</b>		<b>771</b>	<b>(3.3 %)</b>	<b>9'796</b>	<b>(42.8 %)</b>	<b>10'567</b>	<b>(46.1 %)</b>
Sex	female	410	(1.8 %)	5'229	(22.8 %)	5'639	(24.6 %)
	male	237	(1.0 %)	3'605	(15.8 %)	3'842	(16.8 %)
	unknown	124	(0.5 %)	962	(4.2 %)	1'086	(4.7 %)
<b>Unknown</b>		<b>17</b>	<b>(0.1 %)</b>	<b>91</b>	<b>(0.4 %)</b>	<b>108</b>	<b>(0.5 %)</b>
<b>Total</b>		<b>3'781</b>	<b>(16.5 %)</b>	<b>19'124</b>	<b>(83.5 %)</b>	<b>22'905</b>	<b>(100.0 %)</b>





### Circumstances of poisoning

Table 3 shows the circumstances of poisoning in 22'905 cases. **Accidental acute intoxications** (16'868) occurred most frequently with children at home, particularly around noon or during early evening. In adults, a significant number of accidental poisonings occurred at the working place (808).

**Acute intentional poisoning** was mostly suicidal (3'695 cases), less frequently due to drug abuse (498 cases), and rarely to criminal behavior (50 cases).

**Chronic poisoning** was relatively rare (620 cases). **Unwanted reactions to drugs** in therapeutic doses provoked 301 information requests.

**Tab. 3 Circumstances of toxic exposures**

Circumstances of toxic exposures	Acute intoxications (Exposure <8h)	Chronic intoxications (Exposure >8h)
Accidental domestic	13'906 (60.7 %)	119 (0.5 %)
Accidental occupational	808 (3.5 %)	136 (0.6 %)
Accidental environmental	124 (0.6 %)	67 (0.3 %)
Accidental others	2'030 (8.9 %)	67 (0.3 %)
<b>Total accidental</b>	<b>16'868 (73.7 %)</b>	<b>389 (1.7 %)</b>
Intentional suicidal	3'695 (16.1 %)	44 (0.2 %)
Intentional abuse	498 (2.2 %)	62 (0.3 %)
Intentional criminal	50 (0.2 %)	8 (0.0 %)
Intentional others	687 (3.0 %)	117 (0.5 %)
<b>Total intentional</b>	<b>4'930 (21.5 %)</b>	<b>231 (1.0 %)</b>
<b>Total accidental and intentional</b>	<b>21'798 (95.2 %)</b>	<b>620 (2.7 %)</b>
<b>Total acute and chronic</b>	<b>22'418</b>	<b>(97.9 %)</b>
<b>Adverse drug reactions</b>	<b>301</b>	<b>(1.3 %)</b>
<b>Inclassifiable</b>	<b>186</b>	<b>(0.8 %)</b>
<b>Total</b>	<b>22'905</b>	<b>(100.0 %)</b>



## Agents involved

Table 4 shows the different groups of agents involved in the 22'905 cases of human poisoning.

Most toxic exposures occurred with drugs (36.6 %), followed by household products (24.0 %) and toxic plants (10.7 %).

**Drugs:** In adults, intoxications occurred most frequently by intentional ingestion of antidepressants, analgesics, hypnotics and tranquilizers. Small children ingested numerous different pharmaceutical products, including disinfectants, eye drops, contraceptive pills, ointments and suppositories. Abusive ingestion of drugs occurred mainly with substances producing euphoria, but also with laxatives and diuretics. In adolescents, the misuse of the cough suppressant dextromethorphan has been slightly less frequent than in 1998.

**Household products:** Here, children cases dominated. Small children ingested whatever they could get, e.g. cleaners, button batteries, colors, mercury (from damaged thermometers) or lamp oil. The latter was still responsible for some aspiration pneumonias, but there is a continued decrease of severe poisoning from petroleum distillates since the early nineties. Adults experienced several accidents due to careless manipulation of household products (e.g. aspiration of gasoline by mouth, or eye splashes of a decalcifier).

**Tab. 4 Agent groups involved in human poisoning**

Agent groups/Age groups	Adults	Children	Age unknown	Total	
Drugs	4'879	3'490	11	8'380	(36.6 %)
Household products	1'643	3'821	27	5'491	(24.0 %)
Plants	396	2'031	17	2'444	(10.7 %)
Technical and industrial products	1'161	403	10	1'574	(6.9 %)
Toilet articles and cosmetics	149	915	1	1'065	(4.6 %)
Recreational and abused drugs	427	435	-	862	(3.7 %)
Food and beverages	567	263	12	842	(3.7 %)
Products used in agriculture and horticulture	316	432	11	759	(3.3 %)
Poisonous animals	346	146	-	492	(2.2 %)
Mushrooms	232	93	3	328	(1.4 %)
Veterinary drugs	24	43	-	67	(0.3 %)
Other or unknown agents	427	158	16	601	(2.6 %)
<b>Total</b>	<b>10'567</b>	<b>12'230</b>	<b>108</b>	<b>22'905</b>	<b>(100.0 %)</b>



**Plants:** The number of accidents with plants remained the same as in the year before. Again, plant exposures concerned mainly children, with more than 80 % of the cases. Small children typically ingested leaves and flowers of indoor plants, as well as all types of fruits and berries. Adults often suffered from skin and eye irritation during gardening or manipulating indoor plants. They also consumed unknown, self-gathered plants. Hallucinogenic plants, e.g. thorn apple, angel's trumpet and deadly nightshade, were still being frequently misused, mainly by adolescents, but sometimes also by adults.

**Technical and industrial products:** In this group, we noticed more consultations than usual regarding the toxicity of mercury. This was due to an incident in October, where children found a reservoir containing 2 litres of metallic mercury in a waste dump.

**Toilet articles and cosmetics:** Mainly children were exposed in this group. Preschool children frequently ingested small amounts of various perfumes, lipsticks, shampoos and creams without experiencing much discomfort. Adults occasionally ingested large amounts of alcohol-containing cosmetics. Accidents also occurred through false application of products for corporal hygiene.

**Recreational and abused drugs:** Cigarettes and alcohol were still predominating in these groups. A sharp increase of information requests, however, resulted from the consumption of the recreational drug GHB (gamma hydroxybutyrate).

**Food and beverages:** This year, besides the usual calls concerning food and food additives, there were two marked call peaks. In the middle of June, many calls concerned a beverage that had possibly been contaminated by a fungicide during bottling, and which caused nausea and vomiting when ingested in sufficient quantities. The second incident occurred at a congress of vegetarians, where a number of delegates suffered from gastro-intestinal symptoms after the consumption of raw beans.

**Products used in agriculture and horticulture:** In this group, fertilizers were frequent. While liquid

fertilizers were mainly involved in children's accidents, the erroneous ingestion of powdered plant fertilizers instead of sugar occurred several times in adults, yet without serious consequences. A considerable number of inquiries concerned insecticides, rat and mouse killers, herbicides and snail baits.

**Poisonous animals:** The calls in this group rose from 388 in the previous year to 492. This was mainly due to an increase of snake bites. We registered more accidents with private snake holders, but also more bites from free living vipers.

**Mushrooms:** The calls in this group decreased from 486 in the previous year to 382. Rotten mushrooms continued to be the main problem. Approximately 1/6 of the calls concerned hallucinogenic "magic mushrooms".

**Veterinary drugs:** Unwanted exposures occurred with a large variety of substances, e.g. vaccines, insecticides, hormone preparations and antibiotics. Intentional ingestions were registered mainly with analgesics and narcotics. Some isolated cases with anabolic hormones were also noticed.

### Severity of poisonings

7'118 inquiries from physicians (81 % of all medical calls) concerned cases with potential or effective poisoning. In these cases, the treating physicians received a written confirmation of the phone consultation, together with a request for a clinical feed-back. A report on the outcome was received in 69 % of the cases. The clinical reports were classified according to causality and symptom severity. 4'068 cases underwent further analysis.

Children were concerned in 1'201 and adults in 2'867 cases.

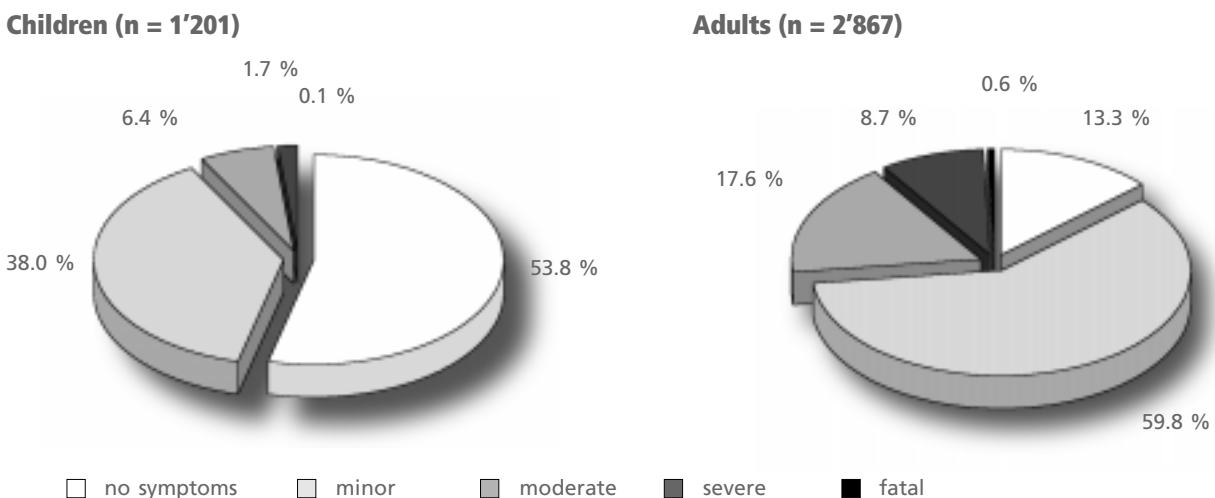
Among children, one half (646 = 53.8 %) experienced no symptoms; among adults, only 382 (13.3 %) were without symptoms. Minor symptoms were seen in 457 children (38.0 %) and in 1'713 adults (59.8 %). Moderate symptoms appeared in 77 children (6.4 %) and 504 adults (17.6 %). Severe poisoning occurred in 20 children (1.7 %) and 250 adults (8.7 %). There was one fatal outcome among the children (14-year-

old girl, suicide by a combination of products). Among the adults, we registered 18 fatal cases (0.6 %).

Table 5 shows the relationship between the agents involved and the degree of poisoning severity.

Approximately two thirds of the 4'068 cases studied were mono-intoxications. In approximately one third of the cases, two or more agents were involved. These combined intoxications were classified under the most important agent.

**Fig. 3 Clinical outcome of poisoning cases in different age groups**





**Tab. 5 Agent groups / Severity of poisoning**

Agent groups/ Severity of poisoning	Adults					Children					Total
	N	Mi	Mo	S	F	N	Mi	Mo	S	F	
Drugs	276	1'103	322	184	9	354	224	35	15	1	2'523 (62.0 %)
Household products	34	143	15	2	1	141	114	6	-	-	456 (11.2 %)
Technical and industrial products	28	214	28	10	-	25	23	9	1	-	338* (8.3 %)
Recreational and abused drugs	13	69	65	36	3	24	27	6	2	-	245 (6.0 %)
Plants	9	20	18	-	-	39	19	6	-	-	111 (2.7 %)
Mushrooms	4	27	27	3	-	5	5	4	-	-	75 (1.8 %)
Products used in agriculture and horticulture	7	33	5	4	4	22	4	1	2	-	82 (2.0 %)
Toilet articles and cosmetics	2	16	-	-	-	23	26	1	-	-	68 (1.7 %)
Poisonous animals	2	20	10	3	-	3	7	3	-	-	48 (1.2 %)
Food and beverages	-	15	5	-	-	4	2	1	-	-	27 (0.7 %)
Veterinary drugs	-	4	-	3	-	4	-	-	-	-	11 (0.3 %)
Other and unknown agents	7	49	9	5	1	2	6	5	-	-	84 (2.1 %)
<b>Total</b>	<b>382</b>	<b>1' 713</b>	<b>504</b>	<b>250</b>	<b>18</b>	<b>646</b>	<b>457</b>	<b>77</b>	<b>20</b>	<b>1</b>	<b>4'068 (100.0 %)</b>

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

\* This figure includes 19 patients between 6 and 55 years without individual age specification. They have been added here to the adults.



**Drugs:** Medicinal drugs were by far the most frequent cause of poisonings (2'523 cases = 62.0 %). The proportion of severe cases was much lower in children (15 cases) than in adults (184 cases). The agents most frequently involved were those acting on the central nervous system (1'558 = 61.8 %), like analgesics, tranquilizers, antidepressants, hypnotics and neuroleptics. There was a striking number of serious intoxications with trimipramine (73 cases, including 15 severe and 24 moderate). Hepatotoxic effects of poisoning by the analgesic paracetamol, also, were not rare (125 cases, including 4 severe and 12 moderate). Intoxications by drugs for lung diseases (309 cases = 12.3 %) included mainly 12 serious cases with H1-antihistaminics (diphenhydramine 7, promethazine 4, doxylamine 1). Antirheumatic drugs (mainly nonsteroidal) were involved in 220 cases (8 severe, 16 moderate). Poisoning with cardiovascular drugs was registered in 111 (6 severe, 2 fatal) and poisoning with gastroenterologic drugs in 106 (3 severe, 1 fatal) cases. In total, 10 intoxications with medicinal drugs (single and combined) were fatal. Most of them were suicides.

**Household products:** Household products were the second frequent cause of poisoning (456 cases = 11.2 %; tab. 5). The most frequently involved agents were cleaners and polishes (173 cases), followed by bleaches (51 cases), liquid combustibles (47 cases) and decalcifiers/softeners (41 cases). Only two poisonings in adults were severe (methylated spirits 1, cleaner 1). One fatal case occurred in an elderly woman, which died from complications following the ingestion of a dishwasher mistaken for a beverage. The overall frequency of severe dishwasher poisoning, however, was very low.

**Technical and industrial products:** This group of products caused 338 (8.3 %) classifiable cases of poisoning. Alkalies and acids were the most frequently involved substances (82 cases, including 5 severe corrosive effects). A small epidemic of mercury poisoning occurred in 31 children. In 4 children, mercury levels in urine reached values requiring systemic chelation therapy (Dimaval®). The children recovered without any signs of long-term damage.

**Recreational and abused drugs:** 245 poisonings (6.0 %) occurred in this group, with a predominance of alcohol (ethanol, 87 cases), nicotine (47 cases) and cannabis (32 cases). The ingestion of nicotine (tobacco orally) occurred mostly in children (39 cases). A relatively new recreational drug, gamma hydroxybutyric acid (GHB), became established in Switzerland also in 1999. 11 of 17 patients were hospitalized because of a mostly profound coma. 6 of these 17 cases were classified as severe, but none was fatal. The 3 registered fatalities concerned heroin and cocaine.

**Plants:** We received medical reports on plant poisonings in 111 cases. None of these cases were severe or fatal. 11 moderate poisonings resulted from the abusive ingestion of hallucinogenic plant extracts of angel's trumpet, thorn apple and deadly nightshade. A child suffered a painful swelling in the throat with accompanying difficulty in breathing after chewing a branch of daphne (*Daphne* sp.). A boy experienced repeated vomiting and profuse perspiration after the ingestion of viburnum (*Viburnum* sp.). Chronic ingestion of a slimming tea containing wall germander (*Teucrium chamaedrys*) led to jaundice and liver cell necrosis in one patient. Additional isolated cases of moderate severity were seen with spurge (*Euphorbia* sp.), club moss (*Lycopodium clavatum*), common rue (*Ruta graveolens*) and milkweed (*Asclepias* sp.).

**Mushrooms:** Mushroom poisoning continued to decline in 1999 (75 cases vs. 110 in 1998). With 3 exceptions, all mushroom ingestions remained without symptoms (9 cases), or with minor (32 cases) or moderate symptoms (31 cases). The latter as well as the 3 severe poisonings were mainly due to the abusive consumption of hallucinogenic "magic mushrooms" (e.g. *psilocybes*). Poisoning by death cap, dangerous and not rare in earlier years, was again not registered in 1999.

**Products for agriculture and horticulture (including pesticides):** 82 poisonings (2.0 %) occurred in this group. There were 4 fatal cases: 2 by silage gases, 1 by a fungicide and 1 by a rodenticide. The latter was due to aluminium phosphide, a highly toxic



rodenticide (the pure substance belongs to the toxicity class 1 in Switzerland). Many cases of this type have been reported in developing countries, particularly in India. Poisoning by aluminium phosphide or related substances is fortunately very rare in Switzerland. The lethality is high. Aluminium phosphide is transformed in the stomach into phosphine, which is responsible for the toxicity. Phosphine is a highly toxic gas which particularly damages the organs with high oxygen need.

**Toilet articles and cosmetics:** 68 cases (1.7 %) have been registered in this group. The outcome was either symptomless or of minor severity, with the exception of a moderately severe case following the ingestion of a shampoo.

**Venomous animals:** Accidents with venomous animals were more frequent in 1999 (48 cases) than in the previous year (31 cases). This was mainly due to snake bites, partly from free living native vipers (6 moderate and 2 severe cases), partly from exotic snakes held in captivity by private owners (5 cases). An antivenin was necessary once. In the other cases, the patients recovered from sometimes massive local and systemic effects under symptomatic treatment with antiphlogistics and analgesics.

**Food and beverages:** Among the 27 cases with symptomless to moderate outcome, the outstanding event was the already mentioned consumption of raw beans at a congress of vegetarians, which led to a number of lectin poisonings. Another problem were hemp containing foods, which are becoming more and more popular.

**Other or unknown agents:** Among these, a fatal case with carbon monoxide has been registered (suicide).

### 3.4 Animal poisoning

#### Animals involved

987 calls were related to the following animal species: 581 dogs, 227 cats, 41 horses/poneys, 31 rabbits/hares,

20 birds, 15 cattle (native), 12 guinea-pigs, 11 sheep, 9 goats, 7 tortoises, 6 donkeys, 6 fishes, 2 hamsters, 2 llamas, 2 pigs, 1 bison, 1 chinchilla, 1 deer, 1 hedgehog, 1 rat and 1 tiger. In the remaining cases, various animals not further specified were involved.

#### Agents involved

Table 6 shows the number of calls for the 12 different groups.

**Tab. 6 Agents involved in calls concerning animals**

Agent groups	Cases	
Products used in agriculture and horticulture	263	(26.6 %)
Plants	227	(23.0 %)
Drugs	164	(16.6 %)
Household products	138	(14.0 %)
Technical and industrial products	59	(6.0 %)
Veterinary drugs	54	(5.5 %)
Food and beverages	14	(1.4 %)
Toilet articles and cosmetics	11	(1.1 %)
Recreational and abused drugs	8	(0.8 %)
Poisonous animals	7	(0.7 %)
Mushrooms	4	(0.4 %)
Other or unknown agents	38	(3.9 %)
<b>Total</b>	<b>987</b>	<b>(100.0 %)</b>

The calls concerned primarily products used in agriculture and horticulture (263 cases = 26.6 %), as well as plants (227 cases = 23 %). They were followed, in descending order, by medicinal drugs, household and technical products, and veterinary drugs.

#### **Severity of poisonings**

278 clinical reports on animal poisoning were received. 95 of these cases remained without symptoms, 82 poisonings were classified as minor, and 101 poisonings were moderate, severe or fatal.





**Tab. 7 Agent groups and severity of animal poisoning**

Agent groups/Severity of poisoning	Outcome					Total	
	N	Mi	Mo	S	F		
Products used in agriculture and horticulture	42	20	17	10	6	95	(34.2 %)
Drugs	25	21	11	5	2	64	(23.0 %)
Plants	12	14	4	3	6	39	(14.0 %)
Household products	9	9	4	2	-	24	(8.6 %)
Veterinary drugs	2	5	4	6	5	22	(7.9 %)
Technical and industrial products	4	6	-	2	9	21	(7.6 %)
Poisonous animals	-	4	-	-	-	4	(1.4 %)
Recreational and abused drugs	-	1	2	-	-	3	(1.1 %)
Food and beverages (except mushrooms and alcohol)	-	2	1	-	-	3	(1.1 %)
Toilet articles and cosmetics	1	-	1	-	-	2	(0.7 %)
Other or unknown agents	-	-	-	1	-	1	(0.4 %)
<b>Total</b>	<b>95</b>	<b>82</b>	<b>44</b>	<b>29</b>	<b>28</b>	<b>278</b>	<b>(100.0 %)</b>

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

**Products for agriculture and horticulture (including pesticides):** The predominating agents in 33 moderate to fatal poisonings were, as in the previous year, metaldehyde, chloralose and coumarins. An additional agent, however, caught the attention among these cases: there were 4 poisonings by methomyl, a carbamate, 3 of them with fatal outcome. The accidental ingestion of fly killers containing this substance provoked in 3 dogs and 1 cat the typical symptoms of poisoning by a cholinesterase inhibitor.

**Drugs:** Poisoning by medicinal drugs in animals included a wide variety of agents, e.g. psychopharmaceuticals, analgesics and

cardiovascular drugs. The two fatal cases concerned cats, one of them after renal failure following the therapeutic administration of a nonsteroidal anti-inflammatory drug, the other after cyanosis and exsiccosis following the administration of half a tablet of paracetamol by the owner.

**Plants:** 6 from 39 cases of plant poisonings were fatal. 3 sheep died from ingesting branches of yew (*Taxus baccata*), a guinea-pig from oleander leaves (*Nerium oleander*). Parsnip, ingested by a white horse, provoked a severe, necrotizing photodermatitis, and the ingestion of castor bean leaves caused fatal vomiting and diarrhea in a dog.



**Household products:** Among the 24 cases (8.6 %), only two were severe: the ingestion of a defroster and skin contact with a cresolic soap provoked convulsions in cats. They had to be euthanized.

**Veterinary drugs:** Among the 15 moderate to fatal cases, a considerable number (10 cases) was caused by permethrine. In most of these cases (7 cats), the false administration of a preparation approved only for dogs was responsible for the poisoning. In one case, a cat having only licked the pelt of a treated dog experienced repeated convulsions.

**Technical and industrial products:** This group was concerned in a little less than 8 % of the cases, half of them severe or fatal. Among the fatalities, there were 7 sheeps which died after the ingestion of a 5 % formaldehyde solution, a cow after the ingestion of approximately 300 g of sodium nitrite, and a dog under the typical symptoms of metaldehyde poisoning.



## 4 Other activities

### 4.1 Services

Directly charged services included expert reports, anonymized case analyses pertaining to specific products, elaboration of special product informations for safety data sheets of manufacturers, and mailing of 12'000 first aid guidelines for acute poisonings (previous year: 8'500).

The Swiss Federal Office of Public Health obtained anonymized notifications on serious incidents with all products covered by the Swiss law on poisons.

Regular informations on actual poisonings and toxicological risks were provided on our Internet site ([www.toxi.ch](http://www.toxi.ch)). The number of accessed pages was 56'429 (previous year: 29'416).

Regular consultations in clinical toxicology were performed at the University Hospital Zurich by the medical staff of the STIC.

### 4.2 Education

The academic members of the STIC are participating actively in the teaching and educational program of the Division of Clinical Pharmacology and Toxicology of the University Hospital Zurich.

The experience of the STIC is an important basis for the teaching of medical students in clinical toxicology, and environmental science students (SFIT) in environmental hygiene.

The senior medical staff of the STIC does also regularly contribute to the continuing formation of physicians and other professional organizations in clinical toxicology. In 1999 again, the STIC was repeatedly consulted by the media on actual problems of human toxicology.

Two medical dissertations have been completed in 1999 at the STIC. The research results have been presented in 4 communications at the annual congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT). The medical direction has been invited to deliver two "state of the art lectures" on "diagnosis and treatment of acute and chronic poisoning" at international congresses.

### 4.3 Research projects

The main emphasis of the research efforts continued to be concentrated on the estimation of critical doses for serious and dangerous toxic effects. Specific research projects concerning interactions between medicinal drugs and phytopharmaceutical products are performed in cooperation with the Division of Clinical Pharmacology and Toxicology at the University Hospital Zurich.

### 4.4 Cooperations

The STIC is a member of the newly created "Centre for Xenobiotic and Environmental Risk Research" (Swiss Federal Institute of Technology and University of Zurich). This cooperation does not only increase the competence of the STIC staff members in different areas of toxicology, but also provides the opportunity of redirecting too theoretical inquiries to other experts. The medical director is also working in the national steering committee of **SwissTOX**, which is aimed at linking and coordinating the toxicological competence centres of Switzerland.



## 5 Publications

Ordering  
number

**Intoxikation durch Ecstasy und andere synthetische Drogen.**

Enderlin V., Meier-Abt P.J., Kupferschmidt H.  
Der informierte Arzt 20, 346 - 352, 1999.

1-99

**Interaktionen und unerwünschte Arzneimittelwirkungen: Wie informiere ich mich?**

Fattinger K.E.  
Praxis 88, 713 - 718, 1999.

2-99

**Ingestion of button batteries - management** (Abstract).

Gossweiler B., Truttmann B., Guirguis M., Meier P.J., Radovanovic D., Rauber-Lüthy Ch.  
EAPCCT, XIX International Congress, Dublin, June 22 - 25, 1999.

3-99

**TOXI - a multifunctional system for poisons information and clinical toxicological data evaluation.**

Guirguis M., Gossweiler B., Kupferschmidt H., Lorent J.P., Rauber Ch., Meier-Abt P.J.  
EAPCCT, XIX International Congress, Dublin, June 22 - 25, 1999.

4-99

**Therapie akuter Vergiftungen.**

Kupferschmidt H., Gossweiler B., Wyss P.A.  
In: medkalender 1999/2000, Schwabe Verlag, Basel 1999, p. 843 - 869.

5-99

**Immer wenn er Morcheln ass. Adynamie, Schweissausbrüche, Erbrechen, Durchfall.  
Was kann man dagegen tun?**

Kupferschmidt H.  
Medical Tribune Nr. 22, June 4, 1999.

6-99

**Cardiotoxicity in valproic acid poisoning** (Abstract).

Kupferschmidt H.H.T., Kévorkian J.P., Yang T., Dawling S., Seger D.L.,  
Roden D.M., Baud F.J., Meredith T.J.  
EAPCCT, XIX International Congress, Dublin, June 22 - 25, 1999.

7-99

**Changes in indications for valproic acid therapy have led to increased frequency  
of valproic acid poisoning** (Abstract).

Kupferschmidt H.H.T., Seger D.L., Meredith T.J.  
EAPCCT, XIX International Congress, Dublin, June 22 - 25 1999.

8-99

**„Unangenehm zwar, aber meistens harmlos“.**

Kupferschmidt H.  
TABULA Nr. 4 / October 1999.

9-99



- No clinically relevant effect of lornoxicam intake on acenocoumarol pharmacokinetics and pharmacodynamics.** 10-99  
 Masche U.P., Rentsch K.M., Meier P.J., Fattinger K.E.  
 European Journal of Clinical Pharmacology 54, 865 - 868, 1999.
- Opposite effects of lornoxicam co-administration on phenprocoumon pharmacokinetics and pharmacodynamics.** 11-99  
 Masche U.P., Rentsch K.M., Meier P.J., Fattinger K.E.  
 European Journal of Clinical Pharmacology 54, 857 - 864, 1999.
- Fortschritte in der Abschätzung der Vergiftungsrisiken. Aktuelles aus dem Tox-Zentrum.** 12-99  
 Meier-Abt P.J., Gossweiler B., Guirguis M., Kupferschmidt H., Lorent J.P., Rauber Ch.  
 Schweizer Apothekerzeitung 99 (2), 51 - 52, 1999.
- Akute Vergiftungen.** 13-99  
 Meier-Abt P.J., Kupferschmidt H.  
 In: P.C. Baumann, P. Frey, C. Kurmann, T. Pasch (Hrsg.): Anästhesiologie und Intensivmedizin, 2. Auflage, Verlag Hans Huber, Bern, Göttingen, Toronto, Seattle 1999, p. 196 - 201.
- Akute Vergiftungen.** 14-99  
 Meier-Abt P.J., Kupferschmidt H.  
 In: N.E. Gyr, R.A. Schoenenberger, W.E. Haefeli (Hrsg.): Internistische Notfälle, 6. Auflage, Georg Thieme Verlag, Stuttgart, New York 1999, p. 391 - 424.
- Amalgam und psychische Störungen.** 15-99  
 Meier-Abt P.J.  
 Schweizerische Ärztezeitung 80, 1262-1263, 1999.
- Drug transport: from the cell to the poisoned patient** 16-99  
 Meier P.J.  
 EAPCCT, XIX International Congress, Dublin, June 22 - 25 1999.
- Gifttierunfälle aus der Kasuistik des Schweizerischen Toxikologischen Informationszentrums (STIZ 1966-1995).** 17-99  
 Niedermann F.  
 Thesis University of Zurich, 1999, 85 p.
- Lethal poisoning after ingestion of a tea prepared from the angel's trumpet (Datura suaveolens) (Abstract).** 18-99  
 Rauber Ch., Guirguis M., Meier-Abt ASt., Gossweiler B., Meier P.J.  
 EAPCCT, XIX International Congress, Dublin, June 22 - 25 1999.
- Ropivacaine-induced Convulsions and Severe Cardiac Dysrhythmia after Sciatic Block.** 19-99  
 Ruetsch A.A., Fattinger K.E., Borgeat A.  
 Anesthesiology 90 (6), 1784 - 1786, 1999.

## 6 The Swiss Antidotes Network

In Switzerland the distribution and storage of antidotes is organized uniformly. The information on the individual antidotes and their availability is published regularly in the Swiss List of Antidotes. Antidotes are available in three complementary categories: The first category is destined for general pharmacies and contains the most frequently used antidotes and antidotes which must be available to the public such as activated charcoal. The second category of antidotes is for hospital pharmacies and includes antidotes needed for frequent poisonings which are generally treated in hospitals. The third

category of antidotes is restricted to pharmacies of regional centres and includes antidotes which are infrequently used and/or may be administered late. The inclusion of a substance as an antidote into the List depends on the fact whether it is a drug commonly available in hospitals and pharmacies, its nature as classical antidote, the need of big quantities of a drug if administered as antidote (such as atropine), and whether the use of the drug is not commonly known as antidotal. The ultimate goal is not maximum completeness but a safe and rapid availability of important substances as antidotes.

**Table: The three categories of antidotes of the Swiss Antidote List**

**For public pharmacies:**

activated charcoal, amyl nitrite, biperidene, calciumgluconate-hydrogel, dimeticone drops, N-acetylcysteine, polyethylene glycol 400.

**For hospitals:**

atropine (ampoules), biperidene, calcium, colestyramine, dantrolene, ethanol, flumazenil, glucagon, magnesium, n-acetylcysteine, naloxone, neostigmine, phytomenadione (Vit.K), pyridoxine (Vit.B6), sodium hydrogencarbonate, sodium polystyrene sulfonate.

**For regional centres:**

atropine (100 ml), calcium-disodium-EDTA, deferoxamine, digitalis antidote, dimethylaminophenol (4-DMAP), dimercaptopropane sulfonate (DMPS, Unithiol), dimercaptosuccinic acid (DMSA, Succimer), glycine, hydroxocobalamine, iron-(III)-hexacyanoferrate(II) (Berlin blue), labetalol, methylene blue, obidoxime, phentolamine, physostigmine salicylate, silibinin, sodium thiosulfate.

The regional centres are indicated, with their phone numbers, in the List.



Decontaminants and antidotes for **radioactive materials** are stored at the Cantonal Pharmacy of Zurich and can be ordered by hospitals and other pharmacies in emergencies. Information about the availability of botulinum antitoxin and antivenins for bites of snakes (vipers) is provided by the Swiss Toxicological Information Centre and the "Schweizerisches Serum- und Impfinstitut" (Berne).

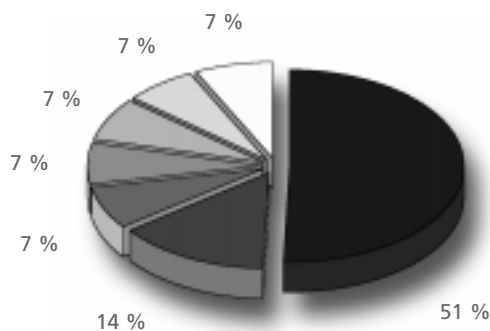
The Swiss List of Antidotes is revised and updated regularly by a special working group of the Swiss Toxicological Information Centre and the Swiss Association of Hospital Pharmacists. It is published

in the Bulletin of the Swiss Federal Office of Public Health and can be viewed in the internet as well (<<http://www.toxi.ch/eng/resources.html>> or <<http://www.galenica.ch/Service/Antidote/Antidotd.htm>>).

Members of the working group are: M. Eggenberger (since 5.11.99), C. Fäh, B. Gossweiler (until 5.11.99), Chr. Hasler, S. Mühlebach, M.-F. Poncet (until 5.11.99), Ch. Rauber-Lüthy (since 5.11.99), and H. Kupferschmidt (chairman).

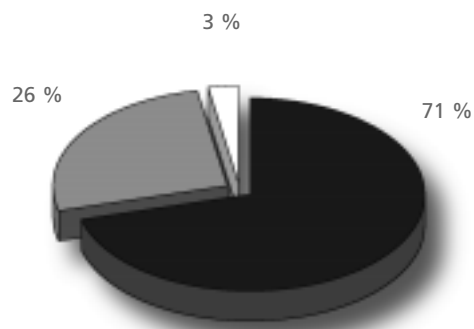
## 7 Income and expenditure

Income Fr. 2'023'864



- Cantons
- Swiss Society of Chemical Industries
- Swiss National Accident Insurance Fund
- Swiss Insurance Association
- Association of Swiss Health Insurance Companies
- Swiss Society of Pharmacists
- Various (mostly private companies and individuals)

Expenditure Fr. 2'026'076



- Salaries and social contributions
- Other ordinary expenses
- Compensation of accumulated deficit



## 8 Donations

	Fr.		Fr.
Galenica Holding AG	15'000	Schmidiger + Rosasco AG	2'000
Compaq Computer AG (hardware)	13'500	Swiss Petroleum Industry Association	1'500
Büro Furrer (furniture)	10'000	Unione Farmaceutica SA	1'500
City of Zurich	10'000	Association of the Swiss Soap and Detergent Industry	1'000
Migros culture commitment	10'000	Bayer (Switzerland) AG	1'000
Karl Mayer-Foundation	5'000	Biomed AG	1'000
Nestlé SA	5'000	Coca-Cola AG	1'000
Zurich Financial Services	5'000	Credit Suisse Group	1'000
Colgate-Palmolive AG	4'000	Definitiv Organisation AG	1'000
Association of the Swiss Varnish and Colour Manufacturers	3'000	Düring AG	1'000
Henkel & Cie AG	3'000	Glaxo AG	1'000
Lever Fabergé AG	3'000	Hänseler AG	1'000
Swiss Life	3'000	Jansen AG	1'000
Gösgen nuclear power plant	2'500	Orgamol SA	1'000
3M (Switzerland) AG	2'000	Roche Pharma (Switzerland) AG	1'000
Association of the Swiss Cosmetic Industry	2'000	Staerke & Nagler AG	1'000
Benckiser (Switzerland) AG	2'000	Swiss National Insurance Company	1'000
Ernst Göhner-Foundation	2'000	Victorinox AG	1'000
Gaba International AG	2'000	Visura trust-company	1'000
Merck Sharp & Dohme-Chibret AG	2'000	Warner-Lambert (Switzerland) AG	1'000

Smaller contributions not listed here are frequent and extremely welcome. We are very grateful to all donators.



Par Fax

++41 (1) 252 88

Par courrier

Swiss Toxicological  
Information Center  
P.O. Box  
Freiestrasse 16  
CH-8028 Zürich

## Order

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Please send me the following documents

- Sticker with the emergency phone number
- Leaflet about first aid and poisoning prevention (german, french)
- Reprints from publications (see page 18-19 for ordering)  
These are provided on loan.

If you require several documents, please order them by mail, joining 3 international reply coupons per document.

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Remarks, suggestions

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My address

Signature



