

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

Annual Report 1998

Emergency calls	(01) 251 51 51
Other calls	(01) 251 66 66
Fax	(01) 252 88 33
E-Mail	info@toxi.ch
Internet	www.toxi.ch
Address	Freiestrasse 16 CH-8028 Zürich
Post account	80-26074-7

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
- the Swiss Federation of Physicians.

Additional substantial aid comes from

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

Important donations and contributions come from private companies and individuals (pg. 29).

Foundation Council

President
Dr. F. Merki

Vice-president
Dr. R. Ulrich

Foundation councillors

H.P. Brändle (since 24.6.98), Dr. M. Brentano, V. Diener, State Councillor (until 23.6.98), Dr. M. Giger (until 31.12.98), A. Grüninger, State Councillor (since 24.6.98), V. Meli (until 23.6.98), Dr. W. Morger, U. Müller, Dr. W. Pletscher (since 24.6.98), Dr. D. Schilling (until 23.6.98), Dr. B. Schläppi, Dr. E. Stahel, Dr. J.-C. Tarchini.

Honorary President
Dr. Dr. h.c. A. Nisoli

Management

Medical Director
Prof. P.J. Meier-Abt

Administrative Director
J.P. Lorent

Senior Resident
Dr. H. Kupferschmidt

Senior Resident
Dr. B. Gossweiler-Brunner

Personnel

Dr. Iris Beeler (until 30.4.98), Bettina Emmisberger, Joanna Farmakis, Dr. Markus Feser (since 1.8.98), Tamara Fleischlin, Andrea Forster (since 19.8.98), Andrea Gilomen (since 9.3.98), Dr. Monika Guirguis-Oeschger, Tanja Gut, Julia Jordi (since 5.10.98), Dr. Katharina Hofer, Dr. Johanna Koller (until 31.10.98), Dr. Eva Liggerstorfer (until 30.6.98), Maria Lutz (since 2.9.98), Meike Kummer (until 30.4.98), Dr. Marta Wilfrida Kunz, Elisabeth Malnati-Rissi, dipl. pharm. Andrée Meier-Abt, Christoph Meier, Antonia Nauser, Rose-Marie Panagl, Dr. Dragana Radovanovic-Ivosevic, Dr. Christine Rauber-Lüthy, Trudi Saile-Schneider, Franziska Spahr, Dr. Duko Sperlich (since 1.3.98), Dr. Martina Spycher (until 15.4.98), Dr. Nicole Stern-Vogt, Dr. Regina Tadros-Schenkel, Dr. Berta Truttmann, med. pract. Stefan Widmer (since 1.6.98).

Advisers

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

Contents

	Page
1	Editorial 3
2	Introduction 4
3	Emergency and information service 5
	3.1 Methods 5
	3.2 Call statistics 6
	3.3 Human poisoning 10
	3.4 Animal poisoning 18
4	Other activities 20
	4.1 Services 20
	4.2 Education 20
	4.3 Research projects 21
	4.4 Cooperations 21
5	Summary and perspectives 22
6	Publications 24
7	The Swiss Antidote Network 27
8	Income and expenditure 28
9	Gifts 29

1 Editorial

Dear Reader

This annual report differs from the previous ones in several aspects. New statistical evaluations have been introduced that respond to current European harmonization efforts. The causality assessments, as well as the classification of the poisoning situations have been adapted. Data quality control has progressed, due to standardization of our call sheets, as well as of the clinical outcome reports. This has been realized with the help of TOXI, a database built in cooperation with our software partner mib génie-logiciel.

The cooperation between private and public organizations devoted to public health has been a tradition in our institution. The Swiss Federation of Physicians, however, has now stopped its financial participation. We regret this very much. We are the more grateful to the founding organizations (the Swiss Society of Pharmacists and the Swiss Society of Chemical Industries) for their continuing support. With the additional, considerable aid of numerous partners (see pp. 28-29), we keep moving: right now, an almost entirely new centre, designed for improved efficiency, is being created at the Freiestrasse 16, in the immediate vicinity of the University Hospital. It will be operational in September 1999, thanks to the help of the University and the Canton of Zurich.

The systematic compilation and evaluation of the available data base does produce an ever increasing workload. At the same time, it generates better knowledge and better services. The standardized analysis of the clinical outcomes forms the basis for a more precise risk assessment in practical poisoning situations. An important result of these efforts is the reduction of health care costs due to the prevention of unnecessary treatments and hospitalizations of poisoned patients. In addition, education of the staff physicians has been improved and more income generated by increasing the number of expert reports to authorities and industry, elaboration of state of the art reports and publications.

With these innovations we are confident that the Swiss Tox-Centre will have a good start into the new millenium and continue to justify the support of the private and public institutions.

Dr. Franz Merki
President of the Foundation Council

2 Introduction

For the first time the STIC Annual Report is based entirely upon electronical data collection and evaluation, which has been introduced in 1997. The TOXI database, which has been developed by the STIC and the software company génie-logiciel, made it possible to harmonize the classification of poisoning cases with international standards and to improve the quality of the data base by the introduction of new quality control criteria.

The harmonization includes in particular the classification of therapeutic drugs according to the international ATC code. The classification of non-therapeutic substances, products and chemicals was modified and adapted also to the ATC system. It further includes a standardization of the poisoning situations, a differentiated causality assessment and the inclusion of the Poisoning Severity Score proposed by the European Association of Poison Control Centres and Clinical Toxicologists (EAPCCT) and the WHO. These criteria together with a standardized evaluation of medical case histories provided by the treating physicians are the basis of quality-oriented informations on poisoning in Switzerland and of international comparability.

A particular feature of the data evaluation on poisonings by the STIC is the estimation of critical drug doses leading to moderate and severe intoxications. Thereby, the risk assessment in various poisoning cases can be improved and makes the counseling of patients and doctors on prognosis and therapy of special poisonings more reliable. To reach this goal the collaboration of the treating physicians is required, who continue to report their poisoning cases and feed the database of the STIC with comprehensive and detailed clinical data. These data are evaluated in regard to the dose dependent toxicity and risk of various poisons. This collaboration between the Swiss physicians and the STIC has a 30-year-long tradition and is highly appreciated by the STIC. Based on the poisoning data base unnecessary hospitalizations and procedures can be prevented in a considerable number of cases, contributing to a reduction of health care costs. We hope that in the future physicians and pharmacists will continue to contribute to the knowledge in clinical toxicology to improve prevention, risk assessment, and therapy in acute and chronic poisoning, and to enhance chemical and pharmaceutical safety.

A supplement to this Annual Report containing detailed information on poisoning by specific substances is available at the STIC (CHF 10.-).

3 Emergency and information service

The central services of the STIC are the consultations on the phone for the public and physicians in case of acute and chronic poisoning. The standardized electronic data acquisition and evaluation makes possible an earlier recognition of the epidemiology of poisoning in Switzerland and a more efficient reaction to actual problems and risks in clinical toxicology.

3.1 Methods

Data acquisition

All calls to the information service of the STIC are registered electronically. In all cases of potentially dangerous poisonings physicians and veterinarians are asked for written feedback in a standardized form concerning type of poison(s), ingested dose(s), symptoms, treatment and outcome. These data are then incorporated in a structured manner into the in-house database.

Definitions

Causality

A standardized analysis of the causality of the symptoms permits the evaluation of the cause-effect relationship between a toxic agent and the effects observed.

The following criteria are considered in the analysis: chronology (is there a temporal relationship between the exposition and the symptoms?), type of symptoms (are other causes possible?), and detection of the poison(s) in body fluids or tissue. Based on these criteria, the causality of poisoning is graded into seven causality categories such as definite, probable, possible, doubtful and no causality. The first two degrees are of particular interest: the definite causality (chemical determination positive, symptoms and temporal aspects coherent, no other causes possible) and the probable causality (no chemical determination, but symptoms and temporal aspects coherent, and no other causes possible).

Severity

The severity classification is based on a proposal of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), which distinguishes between minor, moderate and severe cases. A weighted list of symptoms permits the classification of the reported poisoning cases provided sufficiently detailed medical reports have been provided by the physicians, which, on average, is the case in ~ 70% of critically poisoned patients. Minor symptoms are benign, transient, and disappear spontaneously; a treatment is generally not required. Moderate symptoms are marked and/or persistent; a treatment is generally required. Severe symptoms are potentially life-threatening; a treatment is always required.

Data evaluation

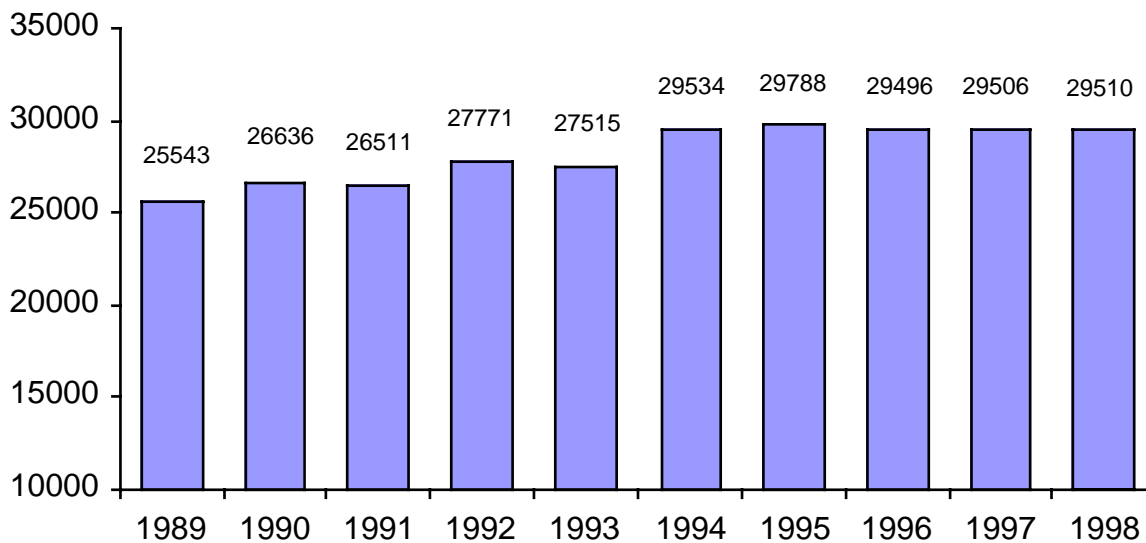
Every medical report is classified according to its causality and severity. In cases without deleterious effects, the absence of symptoms must be confirmed on the report of the treating physician. Among the cases with toxic effects, only those with definite or probable cause-effect relationships are further analyzed.

3.2 Call statistics

Use of the service

In 1998, the emergency and information service of the STIC has been called in 29510 cases. This represents, for the 5th consecutive year, a stable call frequency, which is approximately 10 percent higher as compared to the previous five years (fig. 1).

Fig. 1 Frequency of calls to the centre



Origin of the calls

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

Tab. 1 Origin of calls

Canton	Number of inhabitants	General public	Hospitals	Practitioners	Veterinarians	Pharmacies	Various organizations	Total	Calls per 1000 inhabitants	
									Public	Physicians
AG	536700	1382	344	99	41	37	59	1962	2.6	0.8
AI	14900	47	5	6	1	0	0	59	3.2	0.7
AR	53900	95	32	19	6	1	4	157	1.8	0.9
BE	940900	2391	723	295	98	75	125	3707	2.5	1.1
BL	256900	469	199	77	29	11	24	809	1.8	1.1
BS	190700	513	201	45	4	24	53	840	2.7	1.3
FR	232300	409	189	58	11	27	19	713	1.8	1.1
GE	398300	792	602	108	19	50	52	1623	2.0	1.8
GL	38400	82	22	19	0	2	0	125	2.1	1.1
GR	185100	404	129	92	14	13	15	667	2.2	1.2
JU	69000	104	99	15	5	7	5	235	1.5	1.7
LU	343200	651	251	122	15	11	32	1082	1.9	1.1
NE	165600	363	182	32	19	21	15	632	2.2	1.3
NW	37600	48	10	14	1	2	2	77	1.3	0.6
OW	32100	57	18	4	2	1	2	84	1.8	0.7
SG	444600	970	287	149	18	8	64	1496	2.2	1.0
SH	73500	196	47	25	8	3	17	296	2.7	1.0
SO	242300	464	206	72	13	9	24	788	1.9	1.1
SZ	126400	234	58	39	8	7	8	354	1.9	0.8
TG	225700	471	125	76	23	4	22	721	2.1	0.9
TI	306200	397	268	64	9	24	28	790	1.3	1.1
UR	35700	72	15	7	5	3	2	104	2.0	0.6
VD	611800	1343	547	150	64	75	53	2232	2.2	1.1
VS	274100	381	258	80	19	20	17	775	1.4	1.2
ZG	96600	348	81	37	5	9	18	498	3.6	1.2
ZH	1186300	5448	1081	476	104	124	384	7617	4.6	1.3
FL	31320	56	6	12	0	3	4	81	1.8	0.6
Foreign	-	141	410	54	5	1	47	658	-	-
Unkn.	-	276	11	18	7	4	12	328	-	-
Total	7150120	18604	6406	2264	553	576	1107	29510	-	-
%	-	63.0	21.7	7.7	1.9	2.0	3.8	100	-	-

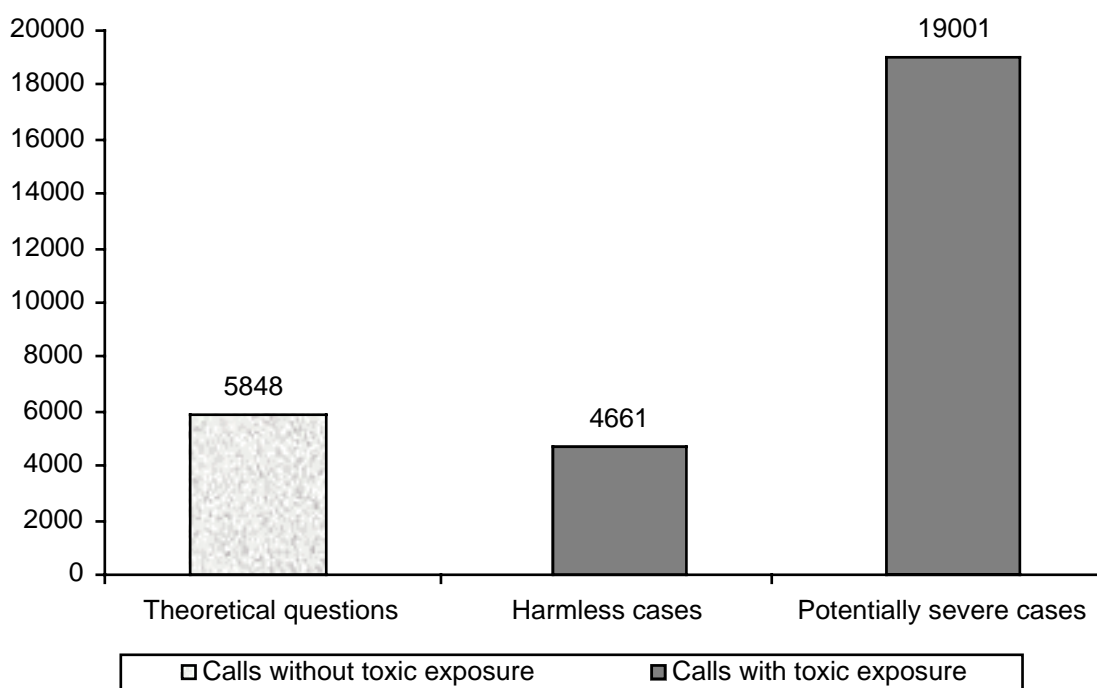
Similarly to previous years, the largest part of the calls (18604) in 1998 came from the public. These calls reflect not only an important need for toxicological information of the Swiss population, but also the different degree of popularity of the centre in various parts of Switzerland. The largest proportion of public calls came from the canton of Zurich (4.6 per 1000 inhabitants), followed, in decreasing order, by the cantons of Zug, Appenzell Innerrhoden, Basel Stadt and Schaffhausen. The cantons with a public call frequency below average were Ticino, Nidwalden, Wallis and Jura.

Physicians called the STIC 8670 times with a clear predominance of emergency hospital physicians (6406), which are confronted most frequently with severely poisoned patients. Other calls included veterinarians (553), pharmacists (576) and various other distributors and organizations (1107).

The types of calls included theoretical questions, harmless and potentially severe poisoning cases (Fig. 2).

Types of calls

Fig. 2 Types of calls (n=29510)



The 23662 cases with toxic exposure concerned 22672 humans and 990 animals.

Calls without toxic exposure (5848)

914 calls (16%) concerned medicinal drugs and 3128 (53%) other agents. Problems of environmental toxicology were identified in 133 cases (2%). 676 calls (12%) were requests for documentation of different types. 611 calls (10%) were redirected to other

institutions or experts. 386 calls (7%) were various non-toxicological, theoretical information requests.

Human cases with toxic exposure (22672)

The cases included 12348 children below 16 years of age (54.5%) and 10228 adults (45.1%). In 96 cases (0.4%), the age group remained unknown.

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

Age	Harmless cases	Potentially severe cases	Total
Children	3 5 2 6 (15.6%)	8 8 2 2 (38.9%)	1 2 3 4 8 (54.5%)
Age: <5 years	2640 (11.7%)	6205 (27.4%)	8845 (39.0%)
5-<10 years	241 (1.1%)	562 (2.5%)	803 (3.5%)
10-<16 years	74 (0.3%)	640 (2.8%)	714 (3.2%)
unknown	571 (2.5%)	1415 (6.2%)	1986 (8.8%)
Sex: Girls	1346 (5.9%)	3233 (14.3%)	4579 (20.2%)
Boys	1494 (6.6%)	3778 (16.7%)	5272 (23.2%)
unknown	686 (3.0%)	1811 (7.0%)	2497 (11.0%)
Adults	1 0 4 6 (4.6%)	9 1 8 2 (40.5%)	1 0 2 2 8 (45.1%)
Sex: female	612 (2.7%)	5029 (22.2%)	5641 (24.9%)
male	342 (1.5%)	3515 (15.5%)	3857 (17.0%)
unknown	92 (0.4%)	638 (2.8%)	730 (3.2%)
Unknown	2 8 (0.1%)	6 8 (0.3%)	9 6 (0.4%)
Total	4 6 0 0 (20.3%)	1 8 0 7 2 (79.7%)	2 2 6 7 2 (100%)

The most frequent incidents occurred in children under five years of age. The proportion of harmless cases was significantly higher in children (15.6%) than in adults (4.6%). In contrast, the proportion of potentially severe cases was somewhat higher in adults (40.5%) than in children (38.9%). Boys predominated among the children (23.2% vs. 20.2%), women among the adults (24.9% vs. 17.0%).

3.3 Human poisoning

The evaluation of the human poisoning data is based on a detailed analysis of agents and cases according to the criteria presented under „Methods“ (see chapter 3.1). Due to limited space, the following analysis is restricted to the level of agent groups. A more detailed, agent-specific analysis can be mailed on demand as a Supplement to the Annual Report (price CHF 10.-).

Circumstances of Poisoning

For the statistical analysis, the circumstances of poisoning have been classified according to a standard scheme. This classification considers the duration of toxic exposures (**acute** < 8 h; **chronic** > 8 h) and the exact circumstances of the incidents (intentional or accidental). **Intentional** intoxications are subdivided into suicidal, abusive, criminal and other incidents. **Accidental** intoxications are subclassified according to place or cause of the incidents, i.e. as domestic (house and garden), professional (at work), environmental (through contamination of air, water or soil), and others. There is an additional category of **adverse drug reactions**, which by definition includes only side effects of drugs in therapeutic dosages.

Accidental acute exposures included 16645 cases (Table 3). They occurred mostly at home or in the garden, and were most frequently caused by medicinal drugs, household products not properly locked away from children, or by poisonous indoor and garden plants. Small children reached particularly plants, hobby materials stored at floor level, ashtrays on low tables or cleaners placed under the sink. The two to four-year olds were able to find drugs and other toxic agents in much less evident places such as in handbags. Adults also were accidentally poisoned at home, be it by inappropriate use of paints and lacquers, by cleaners and decalcifiers left in coffee machines and pans, or by combustion fumes and gases. **Accidental poisonings at work** (673 cases) were caused for instance by leaking containers, accidental aspiration of siphoning chemicals, inhalation of metal fumes, due ocular and cutaneous contaminations with corrosive substances like strong acids.

Tab. 3 Circumstances of toxic exposures

Circumstances of toxic exposures	Acute intoxications (Exposure < 8h)	Chronic intoxications (Exposure > 8h)
Accidental domestic	14436 (63.7%)	177 (0.8%)
Accidental occupational	673 (3.0%)	129 (0.6%)
Accidental environmental	68 (0.3%)	79 (0.3%)
Accidental others	1468 (6.5%)	61 (0.3%)
Total accidental	16645 (73.4%)	446 (2%)
Intentional suicidal	3713 (16.4%)	38 (0.2%)
Intentional abuse	452 (2.0%)	91 (0.4%)
Intentional criminal	28 (0.1%)	10 (0.0%)
Intentional other	552 (2.4%)	94 (0.4%)
Total intentional	4745 (20.9%)	233 (1.0%)
Total accidental and intentional	21390 (94.3%)	679 (3.0%)
Total acute and chronic	22069 (97.4%)	
Adverse drug reactions	349 (1.5%)	
Inclassifiable	254 (1.1%)	
Total	22672 (100%)	

Acute intentional poisoning was identified in 4745 cases. More than three out of four cases were suicide attempts. 452 cases were due to drug abuse, involving not only well-known agents like alcohol, heroin or cocaine, but also abusive consumption of hallucinogenic mushrooms and plant toxins. Some cases of criminal poisoning (e.g. attacks with butyric acid) and other intentional overdoses (e.g. excessive ingestion of drugs against pain or insomnia) were also reported.

Chronic accidental exposures occurred in 446 cases (e.g. solvents or heavy metals at workplace). 233 **chronic intentional exposures** were mainly related to long-term abuse of drugs.

Adverse drug reactions occurred in 349 cases.

Agents involved

Table 4 shows the different groups of agents involved in the 22672 human poisoning cases.

Tab. 4 Agent groups involved in human poisoning

Agent groups/Age groups	Adults	Children	Age un-known	Total
Medicinal drugs	4695	3637	14	8346 (36.8%)
Household products	1597	3741	26	5364 (23.7%)
Plants	401	2051	8	2460 (10.9%)
Technical and industrial products	1101	412	6	1519 (6.7%)
Toilet articles and cosmetics	155	936	1	1092 (4.8%)
Food and beverages	565	249	19	833 (3.7%)
Recreational and abused drugs	355	438	-	793 (3.5%)
Products used in agriculture and horticulture	342	403	4	749 (3.3%)
Mushrooms	331	151	4	486 (2.1%)
Poisonous animals	246	140	2	388 (1.7%)
Veterinary drugs	30	35	-	65 (0.3%)
Other or unknown agents	410	155	12	575 (2.5%)
TOTAL	10228	12348	96	22672(100%)

Most toxic exposures occurred with medicinal drugs (36.8%), followed by household products (23.7%) and plant toxins (10.9%).

Medicinal drugs: Adults were somewhat more frequently poisoned by medicinal drugs than children (56.3%). In adults, the intentional ingestion of antidepressants, analgesics and hypnotics was predominating. Small children ingested a large variety of different products, including tablets, ear and nose drops, ointments, suppositories, sweeteners and aromatic additives. In adolescents, there was a remarkable increase of the abusive ingestion of drugs containing dextromethorphan, a substance used for more than 30 years for its antitussive properties.

Household products: Children were clearly the most frequently exposed group. Cleaners based on detergents were predominating, but alcohol containing products, petroleum distillates, acids and alkalies were also frequently involved. Adults mainly suffered from inhalation of toxic vapors due to careless manipulation of volatile liquids and from eye and skin contamination with acid and/or alkaline solutions.

Plants: Toxic plant ingestion occurred mainly in children. Accidents with indoor plants were typical for children below one year of age, while the 1 to 4 year olds consumed most frequently poisonous fruits and berries (e.g. yew, cherry laurel or european mountain ash). The adolescents quite often consumed plants with hallucinogenic effects such as the angel's trumpet, the thorn apple and the deadly nightshade. Toxic plant exposures in adults were also primarily caused by misuse of hallucinogenic plant components. There were also, however, cutaneous reactions from contacts with giant hogweed and eye splashes from spurge during gardening.

Advertisement

Technical and industrial products: Unsurprisingly, adults were particularly involved here. Occupational exposures occurred with paints, solvents, construction chemicals and industrial cleaners. Still striking were the numerous accidents with industrial cleaners stored in beverage bottles. Serious poisoning was not rare in such cases.

Toilet articles and cosmetics: As with household products and plants, mainly children were involved in poisonings with perfumes, creams, lipsticks, shampoos and bath additives. Beautiful colors, a candy-like presentation (bath globules) or attractive packagings are attractive temptations for ingestion of such products. For example some shower-bath additives are packaged almost like consumable beverages.

Food and beverages: Rotten or uncooked foodstuffs (e.g. haricots, potatoes) were most frequently involved.

Recreational and abused drugs: Alcoholic beverages (mainly in adults) and cigarettes (mainly ingested by children) were predominant, followed by cannabis, ecstasy and cocaine. Beside these drugs, a considerable variety of substances ranging from heroin to „poppers“ (amyl nitrite) were abused.

Agriculture and horticulture: Insecticides, rodenticides, herbicides, snail baits and fertilizers were most frequently the cause of poisoning.

Poisonous animals: Besides bee and wasp stings there were quite a variety of situations involving local and exotic venomous animals.

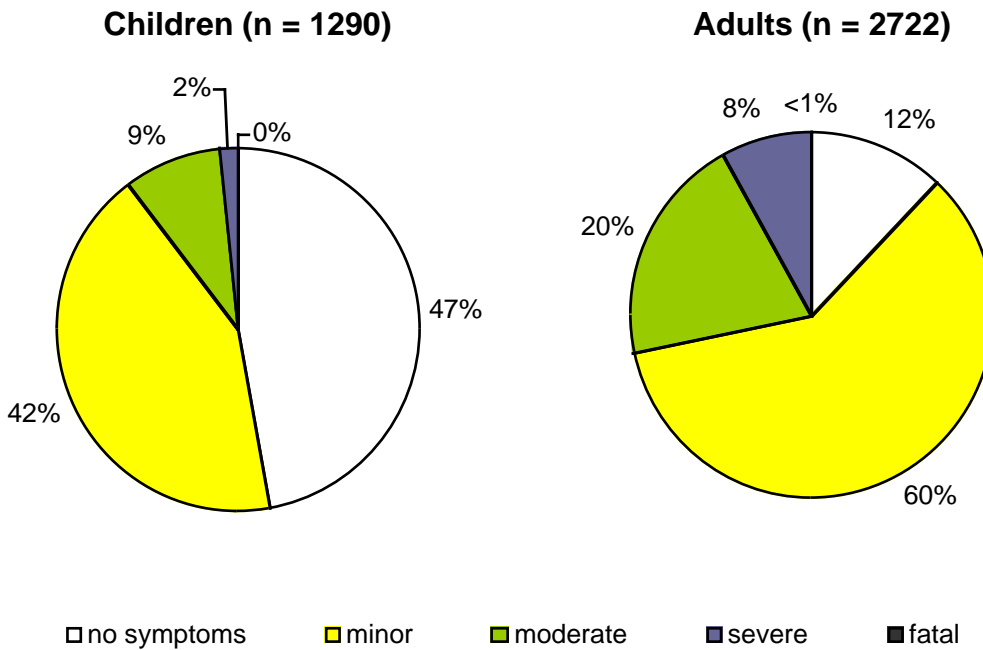
Mushrooms: Rotten mushrooms were the main problem. Gastrointestinal symptoms following the consumption of self-gathered mushrooms often required painstaking inspection of meal residues or vomitings by specialists in order to exclude dangerous death cap poisoning.

Veterinary drugs: Children were mostly at risk from antihelminthics, insecticides and antibiotics. In adults, there were accidents with vaccines, but also intentional ingestions of analgesics and narcotics.

Severity of poisonings

6317 inquiries from physicians (73% of all medical calls) concerned potential or effective poisonings. In all these cases, the treating physicians received a written confirmation of the phone consultation together with a request for a clinical feed-back. Detailed feedback reports on poisoning severity and outcomes were received in 70% of cases. These clinical reports were classified according to causality and severity as described under „Methods“ (section 3.1). 4012 cases with definite or probable causality were further analyzed as indicated in the following figures and tables.

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



Among children 47% (611) experienced no symptoms. Among adults, only 12% (344) remained asymptomatic. Minor symptoms were seen in 545 children (42%) and 1618 adults (60%). Moderate symptoms appeared in 113 children (9%) and 535 adults (20%). Severe poisoning occurred in 21 children (2%) and 209 adults (8%). Fortunately there was no fatal outcome among the children. In adults, the poisoning was lethal in 16 cases (0.6%).

Among the 4012 poisonings, 2614 cases were monointoxications and 1398 cases poly-intoxications. The latter were classified under the main agent involved.

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	
Medicinal drugs	251	1161	313	159	7	310	293	56	13	-	2563 (63.9%)
Household products	23	111	17	3	-	143	111	17	3	-	428 (10.7%)
Technical and industrial products	20	149	47	17	1	27	25	9	1	-	296 (7.4%)
Recreational and abused drugs	11	54	51	21	2	19	18	11	1	-	188 (4.7%)
Plants	8	19	32	1	1	49	31	8	1	-	150 (3.7%)
Mushrooms	6	30	51	-	-	7	13	3	-	-	110 (2.8%)
Products used in agriculture and horticulture	8	27	5	3	5	28	7	2	1	-	86 (2.1%)
Toilet articles and cosmetics	4	10	3	-	-	15	23	2	-	-	57 (1.4%)
Poisonous animals	1	13	2	1	-	2	9	3	-	-	31 (0.8%)
Food and beverages	1	6	3	1	-	1	3	2	-	-	17 (0.4%)
Veterinary drugs	2	1	2	1	-	2	1	-	-	-	9 (0.2%)
Other or unknown agents	9	37	9	2	-	8	11	-	1	-	77 (1.9%)
TOTAL	344	1618	535	209	16	611	545	113	21	-	4012 (100%)

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

Tables containing detailed information for single agents involved can be obtained as a „Supplement to the Annual Report 1998“ at a price of CHF 10.-.

Medicinal drugs: Medicinal drugs were by far the most frequent cause of poisonings (2563 cases, 63.9%). The proportion of severe cases was much lower in children (13 cases) than in adults (159 cases). Seven adult intoxication cases died.

The agents most frequently involved were those acting on the central nervous system (60.6%) including analgesics, tranquilizers, antidepressants, hypnotics and neuroleptics. Two fatal cases occurred with antidepressants (doxepine; citalopram combined with other drugs), and additional two with opioid analgesics (morphine; methadone).

Next in frequency were intoxications with antihistaminic drugs, antitussives and nonsteroidal antiinflammatory drugs. Three lethal poisonings occurred after overdoses with magnesium, verapamil and a gastrointestinal spasmolytic drug, respectively.

Household products: Household products were the cause of 428 poisonings (10.7%). Only six of these cases were severe (3 in children, 3 in adults). In one child swallowing of a lithium button battery (diameter 20 mm) caused an esophageal perforation with mediastinitis.

Technical and industrial products: This class of substances caused 296 poisonings (7.4%) including 18 severe (17 adults, 1 child) and one lethal cases. They were mostly due to corrosive agents (inhalations, ingestions or eye splashes), alcohol, methanol and petroleum distillates.

Recreational and abused drugs: 188 poisonings (4.7%) occurred in this group with a predominance of alcohol, nicotine and cannabis. Alcohol intoxications occurred in 45 adults and 14 children. In 10 severe cases they were combined with other drugs. Nicotine intoxications occurred mostly in children (25 cases) due to tobacco (cigarette) ingestion. One adult consumed 10 cigarettes in a suicidal attempt. In cannabis poisoning, the typical symptoms were agitation, anxiety and hallucinations. One fatal case was caused by combined inhalation of cannabis and isobutyl nitrite: an acute psychosis developed and the patient jumped out of the window. The second fatal case in this group occurred in a young patient following the consumption of amphetamines (cardiovascular failure).

Plants: Clinically relevant plant poisonings occurred in 150 cases (3.7%). Nine children suffered moderate to severe phototoxic skin reactions after contact with the giant hogweed (*Heracleum mantegazzianum*). In young adults, the abuse of hallucinogenic plants like the angel's trumpet (*Datura suaveolens*), the thorn apple (*Datura stramonium*) or, more rarely, the deadly nightshade (*Datura stramonium*) continued to rise. 23 moderate, one severe and one fatal poisonings occurred in a group of adolescents after intentional consumption of *Datura* extracts.

Mushrooms: Approximately one half of the 110 poisoning cases were classified as minor, mostly due to uncontrolled or rotten mushrooms. The circumstances were similar in one half of the moderate cases, where gastrointestinal symptoms were more persistent and more violent than in the first group. The other half of the moderate poisonings were due to the intentional ingestion of hallucinogenic mushrooms leading to anxiety, agitation and hallucinations.

Products for agriculture and horticulture (including pesticides): 86 poisonings (2.1%) occurred in this group. Two fatal cases were due to insecticides (cholinesterase inhibitors) and another three to herbicides.

Toilet articles and cosmetics: Among the 57 cases (1.4%), a child and an adult suffered moderate poisoning from the ingestion of cosmetics containing alcohol. The ingestion of detergents provoked massive gastrointestinal irritation in a child and in an adult.

Venomous animals: Among 31 accidents with venomous animals five envenomations were moderate and one severe. In a 10 year old child, a snake (*Viper*) bite was followed by massive local swelling and various systemic symptoms. An adult suffered a severe allergic reaction after a bite by an asp viper. The sting of a weeverfish induced moderate

toxic symptoms in a child. Ciguatera intoxication was reported in one man. The two other moderate cases were due to insect stings, one of them with 50 bee stings in a small child.

3.4 Animal poisoning

Animals involved

990 calls were related to the following animal species: 568 dogs, 207 cats, 48 horses/ponies, 34 rabbits/hares, 31 cattle, 19 birds, 15 guinea-pigs, 9 sheeps, 8 goats, 7 donkeys, 6 pigs, 4 rats/mice, 2 tigers, 1 squirrel, 1 deer, 1 hedgehog, 1 iguana, 1 tortoise and 1 snake. In the remaining cases, various animals not further specified were involved.

Agents involved

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

Tab. 6 Agents involved in calls concerning animals

Agent groups	Cases	
Products used in agriculture and horticulture	283	(28.6%)
Plants	249	(25.2%)
Medicinal drugs	147	(14.9%)
Household products	116	(11.7%)
Technical and industrial products	48	(4.9%)
Veterinary drugs	42	(4.2%)
Recreational and abused drugs	16	(1.6%)
Mushrooms	15	(1.5%)
Toilet articles and cosmetics	13	(1.3%)
Poisonous animals	12	(1.2%)
Food and beverages	11	(1.1%)
Other or unknown agents	38	(3.8%)
TOTAL	990	(100%)

Severity of poisonings

269 clinical reports on animal poisoning were received. 93 of these cases remained without symptoms, 100 poisonings were classified as minor, and 76 poisonings were moderate, severe or fatal. Fatal poisoning resulted particularly from products used in agriculture and horticulture.

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	41	29	14	5	7	96	(35.7%)
Medicinal drugs	22	24	6	2	0	54	(20.1%)
Plants	12	16	6	3	3	40	(14.9%)
Veterinary drugs	2	9	6	6	1	24	(8.9%)
Household products	9	8	2	2	1	22	(8.2%)
Technical and industrial products	4	5	3	3	-	15	(5.6%)
Recreational and abused drugs	-	4	1	-	-	5	(1.8%)
Mushrooms	-	2	1	-	-	3	(1.1%)
Poisonous animals	-	1	1	-	1	3	(1.1%)
Other or unknown agents	3	2	1	1	-	7	(2.6%)
TOTAL	93	100	41	22	13	269	(100%)

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

Products for agriculture and horticulture (including pesticides): The most serious survived cases were poisonings by chloralose and cholinesterase inhibitors. Three dogs and one pony did not survive the ingestion of snail grains containing metaldehyde. A fungicide (difenoconazol) was fatal for two guinea pigs, and an insecticide (cholinesterase inhibitor) caused fatal intoxication in a dog.

Medicinal drugs: Animal poisonings occurred with a wide variety of drugs, including psychopharmaceuticals, analgesics and cardiovascular drugs. Nonsteroidal antiinflammatory drugs induced bloody vomiting and epileptiform convulsions in two dogs.

Plants: 6 out of 40 plant intoxications were severe or fatal. The involved plants were yew (*Taxus baccata*), oleander (*Nerium oleander*), black locust (*Robinia pseudoacacia*), and an Arum plant (*Epipremnum pinnatum*).

Household products: The only severe case was a dog with convulsions, hyperthermia and respiratory insufficiency following the ingestion of metaldehyde tablets.

Veterinary drugs: Among 24 poisoning cases (8.9%), a tiger died after having eaten from a calf that was killed with pentobarbital. Other moderate or severe poisonings were related to antiparasitic drugs, especially to cutaneous application of permethrin in cats, which are well known for their permethrin intolerance.

Technical and industrial products: The most important poisonings occurred with urea, petroleum distillates and acids.

Recreational and abused drugs: Four dogs had suffered intoxications with cannabis. Another dog developed vomiting, trembling and an incapacity to walk after cigarette ingestion.

Venomous animals: Viper bites were the cause of severe and fatal intoxications in a dog and a calf, respectively.

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 8500 first aid guidelines for acute poisonings.

The member firms of the Swiss Society of Chemical Industries obtained anonymized notifications on serious incidents with their products.

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). The number of accessed pages was 29'416 (previous year: 12117).

Regular consultations in clinical toxicology were performed at the Emergency Unit of 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.

One of our physicians has successfully completed a postgraduate course in occupational toxicology at the Federal Technical Institute of Zurich and the University of Lausanne.

Dr. H. Kupferschmidt, head physician, has accomplished a 9-month clinical and research training at an internationally recognized center for clinical toxicology in the United States.

The experience of the STIC is an important basis for the teaching of students in clinical toxicology, which is provided by the medical director.

The medical staff of the STIC does also regularly contribute to the continuing formation of physicians and other professional organizations in clinical toxicology. In 1998, its opinion on actual problems of human toxicology was also repeatedly requested by the media.

In march 1998, the STIC had the honour and pleasure to organize the „XVIII International Congress of the European Association of Poisons Centres and Clinical Toxicologists“ at the University Zurich-Irchel.

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. The agents studied in most details were the serotonin reuptake inhibitors, the nonsteroidal antiinflammatory drugs and the H1 antihistaminics.

4.4 Cooperations

The close cooperation with the Department of Medicine and the Division of Clinical Pharmacology and Toxicology of the University Hospital Zurich was developed further. Through this cooperation the medical staff of the STIC has clinical access to hospitalized poisoned patients and direct professional contacts with various other medical subspecialties.

The STIC is also a member of a working group on environmental toxicology at the University of Zurich, and a member of the recently created Centre for Xenobiotic and Environmental Risk Research (Swiss Federal Institute of Technology and University of Zurich). This local network between various toxicological groups does not only increase the competence of the STIC staff members in different areas of toxicology, but also provides the opportunity for broad cooperations with many other specialists in toxicology. Especially important is the possibility of redirecting special inquiries to respective experts within the new toxicological competence centre. This possibility should help to handle the increasing number of theoretical and research-directed questions that have been and will continue to be directed to the STIC because of the closure of the Toxicology Institute in Schwerzenbach.

5 Summary and perspectives

With 29510 calls, the services of the STIC were used as frequently in 1998 as in the previous five years. There is thus a persistent demand from the population as well as from the physicians for competent advice on poisoning coming from an independent authority. This may well remain so in the near future, as the number of actual problems with medicinal drugs and other xenobiotics does not seem to diminish (some examples are abused drug emergencies, liver damage due to medicinal drugs, chemical food adulterations, or excessive use of antibiotics and hormones in meat production).

The **call frequency** of 4.2 calls per 1000 inhabitants is average among comparable european centres. The centre of Lille for instance answers 4.3 calls per 1000 from the north of France (annual report 1998), while the figure is 8.3 in Sweden (annual report 1997), 2.5 in Portugal (annual report 1997), and 0.8 in Erfurt for the eastern part of Germany.

Serious and fatal poisoning, in 1998, occurred mainly with medicinal drugs, household products, technical and industrial agents, recreational and abused drugs, poisonous plants and agricultural as well as horticultural chemicals (see table 5). Medicinal drugs are still most frequently used in suicide attempts, while poisoning from other agents is mostly accidental. Accidental poisoning in childhood is mainly due to improperly stored household products and poisonous plants. Another serious problem is the constantly increasing number of dangerous intoxications with drugs of abuse, like alcohol and hallucinogenic agents. In Zurich, the consumption of a self-made extract of Angel's trumpet caused several cases of serious anticholinergic poisoning. A young woman died following an uncontrollable hyperthermia. The consumption of hallucinogenic mushrooms did also substantially contribute to the rise of relatively serious cases of anticholinergic poisoning. Finally, the use of cannabis cannot be qualified as entirely innocuous, as by now several cases of severe psychoses due to oral cannabis ingestion have also been communicated in the international literature.

The main task of the physicians at the STIC is **to assess**, as adequately and as quickly as possible, **the real risk** in acute and chronic toxic exposures. Many laypersons, when exposed to a potential poison, primarily call the STIC, rather than the family doctor or the emergency service of a hospital. This conveys an important triage function to the physicians of the STIC, as they must decide if a medical consultation or a hospitalization is necessary. In addition, practicing as well as hospital physicians, when they have to decide on emergency measures and the length of a hospital stay, also often rely on the risk assessment of the STIC physicians. The quality of this assessment grows with the number of available case analyses, and with the precision attained in the determination of critical doses for severe outcomes. The fact that continued data analysis effectively helps to avoid unnecessary hospitalizations and corresponding health care costs is shown by the steadily growing number of comparably exposed patients which can be left and treated at home without damage.

A less visible, but more than occasional benefit from the knowledge acquired at the STIC lies in the domain of **poisoning prevention**. In order to achieve the best possible product safety, the Intercantonal Office for Control of Medicine (IOCM), the Swiss Federal Office of Public Health, the cantonal authorities, the producers of medicinal agents, pesti-

cides and household products, as well as the sellers of potentially poisonous plants all rely on the communications and the experience of the STIC.

The introduction of the new classification of agents (ATC code), the development of strict causality criteria and the adaptation of poisoning severity gradings to the recommendations of the European Poisons Centres (EAPCCT) and the WHO are a decisive step towards **international compatibility** in the acquisition and assessment of clinical toxicological data. The STIC is thus well prepared for the discussion, in the proper international and EU panels, of an European and worldwide harmonization of the databases in clinical toxicology. In the long run, these efforts will also undoubtedly favor the quality of the services provided to the Swiss population.

Strengthened local **cooperations** of the STIC with the University Hospital Zurich and toxicologically oriented working groups of the University and the Swiss Federal Institute of Technology in Zurich are also useful. They ensure both a continued education of the STIC staff in all relevant questions of clinical and experimental pharmacology and toxicology - and the possibility to delegate too theoretical demands to appropriate specialists within the created networks.

Concentrating the available forces on the services in clinical toxicology, the core mission of the STIC, is a necessity in a time of impending restrictions of **financial resources**. The staff of the STIC does very much regret the retreat of the Swiss Federation of Physicians from the Foundation Council. It is difficult to understand that the physicians, which are important beneficiaries of the STIC services, do not any more contribute to the traditional mix of private and public financial support, thereby abandoning their engagement in drug and chemical safety. It has become evident in other countries that competent, 24 hours poisons information services can not be financed by charging for emergency calls. The STIC does, however, try to generate additional income through adequate charging for services. The staff of the centre hopes that its efforts will be met by continued private and public support, and is grateful to all sponsors for their contributions.

6 Publications

Ordering
number

- Akute Antihistaminikavergiftungen durch Dimetinden, Promethazin und Cyclizin:** Eine retrospektive Fallanalyse aus dem Schweizerischen Toxikologischen Informationszentrum (STIZ). 1-98
Berchtold W. Thesis University of Zürich, 1998. 83 S.
- The acute toxicity of ecstasy.** [Abstract] 2-98
Enderlin V., Kupferschmidt H., Meier-Abt P.J. EAPCCT, XVIII International Congress, Zürich, March 24-28, 1998.
- Antidote bei Vergiftungen.** 3-98
Fäh C., Gossweiler B., Mühlebach S., Pletscher W., Poncet M.F., Kupferschmidt H. Bulletin Bundesamt für Gesundheit 98, 23 - 28, 1998.
- Vergiftungen.** 5-98
Gossweiler B., Wyss P.A. In: Emmrich P., Sitzmann F.C., Truckenbrodt H. (Hrsg.): Notfälle im Kindesalter. Leitsymptome und initiale Therapie. 12. Auflage. Georg Thieme Verlag, Stuttgart, New York 1998. S. 251-267.
- Toxi - A new tool for tailor-made poisons information.** [Abstract] 7-98
Guirguis M., Strassel M., Lorent J.P.* EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.
- Comparison of acute toxicity between various nonsteroidal antiinflammatory drugs.** [Abstract] 8-98
Koller J.G., Graf B., Gossweiler B., Kupferschmidt H., Meier-Abt P.J. EAPCCT, XVIII International Congress, Zürich, 24 - 28 March, 1998.
- Age-dependent differences in poisoned patients.** [Abstract] 9-98
Kupferschmidt H. EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.
- Assessment of severity and causality in poisoned patients by a poisons information centre.** [Abstract] 10-98
Kupferschmidt H., Gossweiler B., Lorent J.P., Meier-Abt P.J. EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.
- Therapie akuter Vergiftungen.** 11-98
Kupferschmidt H., Gossweiler B., Wyss P.A. In: medkalender 98, Schwabe Verlag, Basel 1997. S. 827-853.
- Die häufigsten akuten Vergiftungen.** Wie erkennen, wie behandeln? 12-98
Kupferschmidt H. Der Informierte Arzt 10-16, 1998.
- Geschichtliche Aspekte der medikamentösen Therapie von Magen-darmkrankheiten.** 13-98
Kupferschmidt H. Ärzte Info Solothurn (Nr. 4), 18-20, 1998.

Publications (end)	Ordering number
<p>Multiple life-threatening metabolic complications in severe valproic overdose. [Abstract]. <i>Kupferschmidt H, Seger D. *, Dawling S. *, Murray L. *, Meredith T.*</i> J Toxicol Clin Toxicol 36: 471, 1998.</p>	14-98
<p>Comparison of acute toxicity between four different selective serotonin reuptake inhibitors. [Abstract] <i>Liggenstorfer E., Kupferschmidt H., Meier-Abt P.J.</i> EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.</p>	16-98
<p>STIZ-Jahresbericht 1997. <i>Meier-Abt P.J., Gossweiler B., Guirguis M., Kupferschmidt H., Lorent J.P., Rauber C.</i> Schweiz. Ärztezeitung, 79, 2675-2678, 1998. (german and french)</p>	17-98
<p>Mechanisms of drug-induced hepatotoxicity. [Abstract] <i>Meier-Abt P.J.</i> EAPCCT, XVIII International Congress, Zürich, March 24-28, 1998.</p>	18-98
<p>The acute overdose toxicity of tetrabamate (Atrium®) in adults. [Abstract] <i>Radovanovic D., Kupferschmidt H., Meier-Abt P.J.</i> EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.</p>	19-98
<p>Dose-dependent toxicity of diphenhydramine overdose. [Abstract] <i>Radovanovic D., Kupferschmidt H., Meier-Abt P.J.</i> EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.</p>	20-98
<p>No benefit of corticosteroid therapy in acute esophageal and gastric caustic lesions. [Abstract] <i>Rauber-Lüthy C., Meier-Abt P.J., Kupferschmidt H.</i> EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.</p>	21-98
<p>Comparison of the acute toxicity of H1-antihistaminic drugs. [Abstract] <i>Schwendinger M., Kupferschmidt H., Meier-Abt P.J.</i> EAPCCT, XVIII International Congress, Zürich, March 24 - 28, 1998.</p>	22-98
<p>Vergleichende Toxizität alter und neuer H1-Antihistaminika: Eine retrospektive Fallanalyse aus dem Schweizerischen Toxikologischen Informationszentrum (STIZ). <i>Schwendinger M.</i> Thesis University of Zürich, 1998. 135 S.</p>	23-98
<p>Surreptitious use of phenylpropanolamine parading as pheochromocytoma. <i>Wiesli P. *, Kupferschmidt H., Koch J.*</i> Research Communications in Alcohol and Substances of Abuse 18, 149–156, 1997.</p>	24-98
<p>XVIII International Congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT): Abstracts. March 24-28, Zürich 1998. (Fr. 55.-)</p>	25-98

* Authors not belonging to the STIC

Advertisement

7 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 supplementary 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), sodium polystyrene sulfonate, pyridoxine (Vit.B ₆).
For regional centres: atropine (100mL), calcium-disodium-EDTA, deferoxamine, dimethylaminophenol (4-DMAP), dimercaptopropane sulfonate (DMPS), dimercaptosuccinic acid (DMSA), iron-(III)-hexacyanoferrate (II) (Berlin blue), glycine, hydroxocobalamine, labetalol, methylene blue, sodium thiosulfate, obidoxime, phentolamine, physostigmine, silibinin.

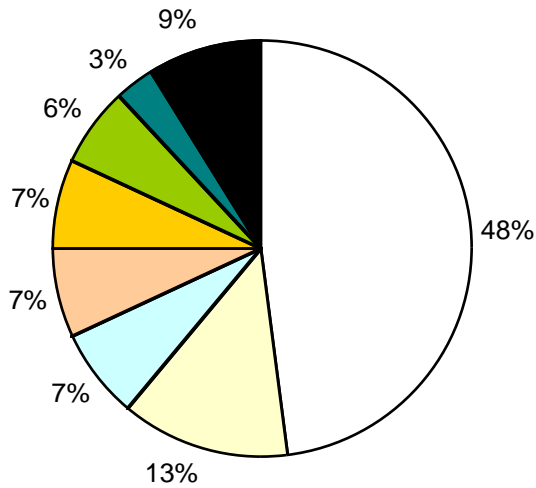
Decontaminants and antidotes for **radioactive materials** are stored at the Cantonal Pharmacy of Zuerich and can be ordered by hospitals and other pharmacies in emergencies. Information about the availability of botulinum antitoxin and antivenins for bites of snakes (vipers) is provided by the Swiss 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: C. Fäh, B. Gossweiler, S. Mühlebach, Ch. Hasler, M.-F. Poncet and H. Kupferschmidt.

8 Income and expenditure

Income

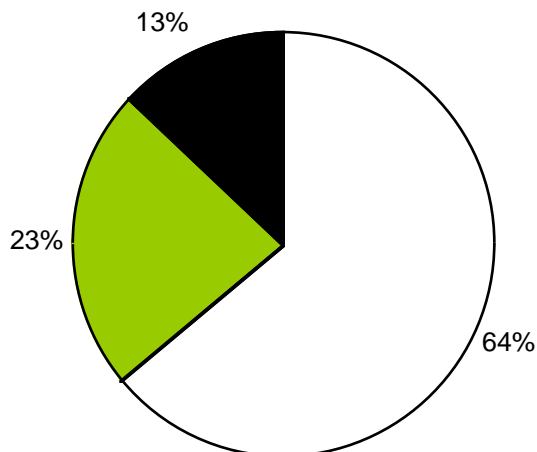
Fr. 2 163 635.-



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

Expenditure

Fr. 2 176 755.-



- Salaries and social contributions
- Other ordinary expenses
- Accruals

9 Gifts

CHF

Galenica Holding AG	15 000
Migros culture commitment	10 000
Swiss Society of Druggists	10 000
City of Zürich	10 000
Federation of the Swiss Veterinary Surgeons	6 000
Coop Switzerland	5 000
Zurich Financial Services	5 000
Karl Mayer-Stiftung	5 000
Nestlé SA	5 000
Association of the Swiss Department Stores	5 000
Colgate-Palmolive AG	3 000
Association of the Swiss Varnish and Colour Manufacturers	3 000
Groupe OFAC	3 000
Henkel & Cie AG	3 000
Lever Fabergé AG	3 000
Rentenanstalt / Swiss Life	3 000
Swiss association of dental manufacturies and trade	3 000
Federation of the Swiss Dentists	3 000
Excom AG (contribution to the Hardware)	2 500
Gösgen nuclear power plant	2 500
Benckiser (Switzerland) AG	2 000
Gaba International AG	2 000
Ernst Göhner-Foundation	2 000
Merck Sharp & Dohme-Chibret AG	2 000
Association of the Swiss Cosmetic Industry	2 000
Erdöl-Vereinigung	1 500
Alusuisse-Lonza Holding AG	1 000
The Baloise, Insurance Company Ltd.	1 000
Bayer (Switzerland) AG	1 000
Crossair AG	1 000
Düring AG	1 000
Glaxo AG	1 000
Hänseler AG	1 000
Jansen AG	1 000
3 M (Switzerland) AG	1 000
Novartis Consumer Health AG	1 000
Orgamol SA	1 000
Roche Pharma (Switzerland) AG (contribution to the print of the annual report)	1 000
Sanitized AG	1 000
Swiss National Insurance Company	1 000
Staerkle & Nagler AG	1 000
Association of the Swiss Soap- and Washing-powder Industry	1 000
Victorinox AG	1 000
Visura trust-company	1 000
Voigt & Co. AG	1 000
Paul Wirth AG	1 000
Zürcher Kantonalbank	1 000

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

by fax

++41 (1) 252 88 33

by mail

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

Order

Please send me the following documents:

- m Sticker with the emergency phone number
- m Leaflet about first aid and poisoning prevention (german, french)
- m Reprints from publications (see pp. 24-25 for ordering)
Dissertations are provided on loan.

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

- m the Supplement to the Annual Report (Tables; CHF 10.-)
-

Remarks, suggestions

My address

Signature

