



Swiss Toxicological  
Information Centre

## ■ Annual Report 2007

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## Contents

- 3 **Editorial**
- 4 **Introduction**
- 5 **Focus**
- 6 **Emergency and information service**
  - 6 Overview of all calls
  - 8 Human poisoning
  - 14 Animal poisoning
- 16 **Other activities**
  - 16 Services
  - 16 Teaching and continuing education
  - 16 Research projects
  - 17 Collaborations
- 18 **The Swiss Antidote Network**
- 20 **Publications**
- 21 **Income and expenditure**
- 22 **Donations**

## ■ Editorial

Dear Readers

Last year was characterised by efforts to achieve long-term financial security for the Swiss Toxicological Information Centre (STIC). We were faced with considerable cuts in federal funding which were justified through massive budget cutbacks at short notice and which could lead in the middle and long term to a reduction in our services and in a worst-case scenario to an end of the 24-hour emergency service. It appears that in 2008 we may have found a solution which is in the interest of the clients of the STIC and the STIC itself. In the reporting year the STIC has signed a service level agreement with the cantons (via the Swiss Conference of Cantonal Directors of Public Health GDK) covering the emergency hotline provided for the public in cases of poisoning with pharmaceuticals and chemicals. This represents a long-awaited recognition of the STIC. Unfortunately though we continue to be hampered by the fact that the medical profession, which chiefly benefits from the services of the STIC, remains on the sidelines and that the FMH-management does not even consider it necessary to continue the negotiations commenced two years ago in a positive spirit or to reply to our correspondence in that respect. The fact that all parts of the health system contribute to the STIC apart from the FMH, should be food for thought not only for the FMH, but also for the wider public and politicians. I continue to hope that we will succeed to gain the renewed support of FMH as a contributor. I would like to use this opportunity to emphasise once again that the STIC is rooted in the solidarity of all contributors who aim to share the responsibility towards the public. If one partner is unwilling to share in the effort, the balance of all contributors threatens to break apart with unpredictable consequences.

Unfortunately the planned association with the University of Zurich to maintain the high quality standard while keeping the independent character of our foundation is still pending. Correspondingly the appointment of a head of scientific services has been delayed. This post is now to be advertised in the current year.

My thanks go to the management and staff of the STIC for their commitment and contribution and to the Foundation Council and supporting organisations for their confidence in and support of the STIC.

DR. FRANZ MERKI  
PRESIDENT OF THE FOUNDATION COUNCIL



## Introduction

This annual report 2007 provides information on enquiry statistics, type and severity of poisoning incidents, educational activities, research projects, collaborations, the Swiss Antidote Network and publications. The section entitled «Human Poisoning» is summarised in tabular format. More detailed information can be found in supplements to the annual reports which are now accessible on our website.

Following a slight decrease in the number of enquiries to the STIC in 2006, this number increased again in 2007 (31 933). The overall level of enquiries does not only stay more or less the same, but also the distribution in terms of agents involved, age distribution and circumstances of poisoning varies only to a small degree. This consistency in poisoning incidents seen in Switzerland is the basis for toxicovigilance and -surveillance, not only as far as pharmaceuticals are concerned, but also in relation to household products, chemicals and natural toxins, since the present rate of poisoning incidents can be compared with historical data on an ongoing basis. There is no comprehensive reporting of poisoning in Switzerland (there is no legal obligation to report such incidents), and therefore the work of the STIC emergency service and its standardised evaluation of all cases is a approximation of the true incidence of poisoning in Switzerland, which is not known in its totality. The data collected by the Federal Office for Statistics through hospital diagnostic codes and statistics on cause of death complete the picture. The incident data base of the STIC is a valuable and unique survey of poisoning incidents and represents Switzerland's toxicological memory. In order to secure its availability for the future the STIC has begun to transfer older data to an electronic format.

Smaller or larger poisoning incidents will in some cases stand out from the background such as the chemical accident in Waldenburg on 16 October 2007 where hydrogen cyanide was released in an industrial plant following the mixing of a cyanide solution with a strong mineral acid. This led to the immediate evacuation of 80 people with 30 injuries being reported. Although no serious intoxications occurred, the incident resulted in significant media coverage.

Today the poisoning advice provided by the STIC is considered a matter of routine in Switzerland. This is due both to the reliability and continuity of the service and the fact that it is free of charge to the person seeking advice in case of an emergency. However, this also means that the users of the STIC are hardly aware of how this service is financed. The way the STIC is financed makes its long term financial security more difficult as it is dependent on the permanent goodwill of the foundation and its contractual partners, in particular the cantons. The fact that the cantons have confirmed their support via a new service agreement at the beginning of 2008 shows that the partners and the public are fully committed to this organisation and its services. Therefore it was all the more disappointing that the Federal Office of Public Health (BAG) had to cut its support by about 40% as a result of parliamentary budget cuts. The announcement by the BAG happened only after the budget for 2007 had been completed. Corrective action could therefore not be taken in time, and in the end this led to a significant surplus in expenditure. For the first time in the history of the STIC staff had to be reduced for economic reasons. The Foundation Council is determined to fight for a reimbursement of the contractual services that reflects the real costs incurred. Corresponding motions were advanced to the Swiss Parliament (Nationalrat and Ständerat). The long term financing of the activities of the STIC remains a priority for the Foundation Council in the coming year.

## Focus

13 **fatal poisonings** in humans were registered by the STIC in 2007 which is about average compared to the past few years. In animals there were 14 cases. Although drugs and pharmaceuticals were predominant in fatal human poisonings, there was also one fatal case following ingestion of European yew tree needles (*Taxus baccata*). This shows that plant poisonings – although rarely – can lead to life-threatening poisonings. Pesticides are a group of substances which contain products with markedly toxic components. Serious and fatal poisonings with insecticides in humans have substantially decreased in the last few years through the shift from cholinesterase inhibitors to products containing pyrethroids. Pyrethroids tend to cause fewer problems when accidentally ingested by humans and animals with the exception of cats which react very sensitively.

Monkshood (*Aconitum napellus*), European yew (*Taxus baccata*) and meadow saffron (*Colchicum autumnale*) belong to the highly toxic **plants** which can cause fatal poisonings. Severe intoxications can also be caused by nightshade plants, for example Angel's Trumpet (*Datura suaveolens*), Deadly Nightshade (*Atropa belladonna*) and Jimson Weed (*Datura stramonium*). These are mostly consumed as recreational drugs. In contrast poisonings with monkshood or European yew occur as part of suicide attempts, whereas ingestion of the leaves of meadow saffron is mostly due to a confusion with wild garlic. In 2007 one female patient who ingested a handful of European yew tree needles suffered severe cardiac arrhythmia and circulatory failure resulting in the patient's death. Severe cardiac arrhythmia was also seen in one patient who had ingested an initially unknown plant. Based on the reported symptoms, laboratory analysis and the course of the disease poisoning with monkshood was assumed. This could be confirmed by detecting aconitine in the patient's blood and urine. Another patient who intentionally ingested the petals of meadow saffron suffered typical anticholinergic symptoms such as dilated pupils, tachycardia, hallucinations, agitation, disorientation, impending intestinal paralysis and ECG changes. Physotigmin was administered as an antidote leading to a rapid improvement of his condition. A group of

school children had a narrow escape when confusing yellow gentian (*Gentiana lutea*) with white hellebore (*Veratrum album*) and ingesting root pieces in a home-made tea. Out of 11 children only 2 were asymptomatic whereas the remainder suffered from nausea, vomiting, dizziness and headache. One child developed bradycardia which had to be treated.

In 2007 the STIC registered 22 cases of **pyrethrin or pyrethroid** poisonings in cats. Three cats died, six animals suffered severe symptoms, mostly generalised convulsions, six cats suffered medium to severe, and seven mild symptoms. Pyrethroids are used as insecticides and acaricides against pests. The most common case of poisoning (18 cases) is the mistaken use of dog products in cats. Cats are particularly sensitive to pyrethroids because of their reduced glucuronyl transferase activity and therefore must not be treated with spot-on products containing pyrethroids. Pyrethrins are extracts of pyrethrum, the naturally occurring active agent in chrysanthemums, while pyrethroids are synthetic insecticides of a similar structure and action. Both delay the influx of sodium ions into the nerve cell and the closing of sodium channels in the nerve membrane. This extended depolarisation causes repetitive nerve discharging. Clinically, this manifests itself in tremors, hyperaesthesia and convulsions. In cats death occurs through respiratory paralysis. In order to improve prevention, a warning not to use this veterinary product in cats has to be more prominently displayed.



## Emergency and information service

The main services provided by the STIC are telephone consultations for members of the general public and physicians in cases of acute and chronic poisoning. In addition, the centre answers theoretical enquiries and contributes to the prevention of accidental poisoning.

All calls to the information service of the STIC are recorded electronically in its own data base, and are analysed in the Annual Report.

### Overview of all calls

#### Use of the service

In 2007, the information service of the STIC received 31 933 enquiries which represents an increase of 2.4% compared to the previous year.

Figure 1

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

1998	29 510
1999	29 669
2000	30 935
2001	32 330
2002	33 111
2003	32 217
2004	31 404
2005	33 512
2006	31 184
2007	31 933

#### Origin of calls

Table 1 shows the number of calls received in 2007 from the individual cantons of Switzerland and the different population groups.

The largest number of calls came from the general public (63.1%). These calls reflect the need for information by the general public, and also how well the STIC is known. The largest proportion of calls from the public originated from the canton of Zurich (4.2 per 1 000 inhabitants). The smallest number of calls was received from the cantons of Ticino, Nidwalden, Jura and Valais.

Physicians used our service 8 768 (27.5%) times. Compared to the year 2006 this represented an increase of 190 calls by hospital physicians and a slight decrease of 62 calls by general practitioners. Based on population, the largest proportion of physician calls came from the cantons of Basel-Stadt and Jura, followed by the cantons of Zurich, Schaffhausen and Glarus. Veterinarians accounted for 557 calls to the STIC, pharmacists for 606.

The STIC answered 126 requests for information from the media (newspapers, radio and television). 1 730 enquiries were received from organisations such as emergency services, care homes, industry, poison centres abroad and non-specified organisations.

Table 1

## The number of calls received in 2007 by cantons and population groups

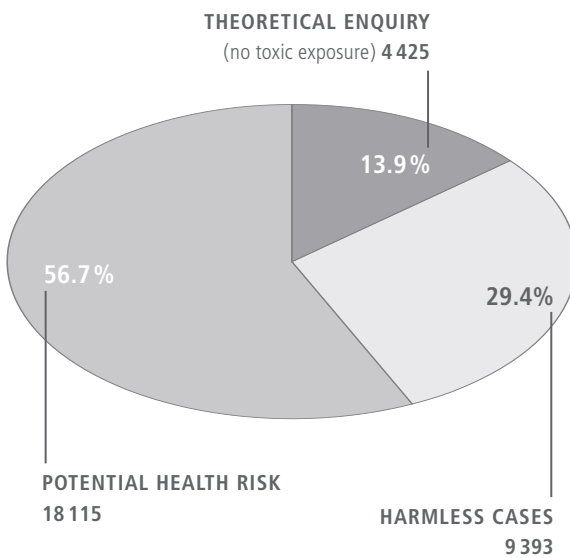
Canton	Population							Total	Calls / 1000 inhabitants	
		General public	Hospital doctors	Practitioners	Veterinarians	Pharmacists	Various		Public	Physicians
AG	574 813	1 473	450	86	40	46	103	2 198	2.6	1.0
AI	15 300	27	2	–	1	–	3	33	1.8	0.2
AR	52 509	93	38	12	1	2	15	161	1.8	1.0
BE	958 897	2 667	797	222	68	77	231	4 062	2.8	1.1
BL	267 166	716	219	57	28	15	56	1 091	2.7	1.1
BS	184 822	499	320	55	5	30	64	973	2.7	2.1
FR	258 252	586	214	30	12	20	45	907	2.3	1.0
GE	433 235	943	394	96	18	56	68	1 575	2.2	1.2
GL	38 084	79	36	15	4	2	7	143	2.1	1.4
GR	187 920	477	171	46	7	5	31	737	2.5	1.2
JU	69 292	99	133	5	7	11	8	263	1.4	2.1
LU	359 110	825	290	102	18	12	61	1 308	2.3	1.1
NE	168 912	296	156	26	17	36	26	557	1.8	1.2
NW	40 012	53	4	7	2	–	2	68	1.3	0.3
OW	33 755	65	15	8	2	–	3	93	1.9	0.7
SG	461 810	956	443	108	37	12	99	1 655	2.1	1.3
SH	73 866	187	81	19	4	6	20	317	2.5	1.4
SO	248 613	573	128	58	15	7	35	816	2.3	0.8
SZ	138 832	297	65	19	6	3	22	412	2.1	0.6
TG	235 764	524	161	57	17	9	49	817	2.2	1.0
TI	324 851	371	373	49	8	23	42	866	1.1	1.3
UR	34 948	78	22	4	1	1	5	111	2.2	0.8
VD	662 145	1 593	573	90	60	84	140	2 540	2.4	1.1
VS	294 608	469	168	54	16	23	34	764	1.6	0.8
ZG	107 171	265	63	25	7	5	33	398	2.5	0.9
ZH	1 284 052	5 383	1 332	379	139	115	577	7 925	4.2	1.4
FL	35 322	73	9	8	–	–	1	91	2.1	0.5
Foreign	–	188	433	28	17	5	61	732	–	–
Unknown	–	291	3	10	–	1	15	320	–	–
<b>Total</b>	<b>7 544 061</b>	<b>20 146</b>	<b>7 093</b>	<b>1 675</b>	<b>557</b>	<b>606</b>	<b>1 856</b>	<b>31 933</b>	<b>2.7</b>	<b>1.2</b>
%	–	63.1	22.2	5.2	1.7	1.9	5.8	100	–	–



### Types of calls

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

Figure 2  
Types of calls (n = 31933)



Among the 4 425 calls (compared to 4 681 in the previous year, -5.5%) without toxic exposure, frequent questions concerned drugs and antidotes, toxicity of plants to children and pets, and the risk of poisoning from spoilt food, household products and chemicals, with the recommendations given by the STIC being predominantly of a preventive nature. This sub-category also includes advice and preparing reports for authorities, media, private individuals and various organisations as well as distribution of fact sheets and referring enquiries to appropriate experts.

The 27 508 calls received following potentially toxic exposure concerned 26 263 humans (compared to 25 267 in the previous year, +3.9%) and 1 245 animals (compared to 1 236, -0.7%). The following section discusses human poisoning, whereas animal poisoning is dealt with in a separate section (pages 14–15).

### Human poisoning

Table 2 shows an overview of the calls received with potentially toxic exposure (26 263). Children were involved in 54% of the cases, adults in 45.7%. In 56 cases (0.2%), the age group remained unknown.

The highest number of calls involved children under five years of age (42.5%). The proportion of harmless cases was significantly higher in children (26.6%) than in adults (7.9%). In contrast, the proportion of cases with potential health risk was somewhat higher in adults (37.8%) than in children (27.4%). Boys were more frequently represented amongst the children (26.4% vs. 23.7%) and women amongst the adults (25.8% vs. 18.7%).



Table 2  
Age and gender of human cases with potentially toxic exposure

		Harmless cases		Potential health risk		Total	
<b>Children</b>		<b>6 985</b>	<b>26.6%</b>	<b>7 208</b>	<b>27.4%</b>	<b>14 193</b>	<b>54.0%</b>
Age	< 5 years	5 825	22.2%	5 338	20.3%	11 163	42.5%
	5 – < 10 years	466	1.8%	621	2.4%	1 087	4.1%
	10 – < 16 years	189	0.7%	747	2.8%	936	3.6%
	unknown	505	1.9%	502	1.9%	1 007	3.8%
Sex	girls	3 125	11.9%	3 087	11.8%	6 212	23.7%
	boys	3 378	12.9%	3 563	13.6%	6 941	26.4%
	unknown	482	1.8%	558	2.1%	1 040	4.0%
<b>Adults</b>		<b>2 079</b>	<b>7.9%</b>	<b>9 935</b>	<b>37.8%</b>	<b>12 014</b>	<b>45.7%</b>
Sex	female	1 224	4.7%	5 556	21.2%	6 780	25.8%
	male	771	2.9%	4 149	15.8%	4 920	18.7%
	unknown	84	0.3%	230	0.9%	314	1.2%
<b>Unknown</b>		<b>21</b>	<b>0.1%</b>	<b>35</b>	<b>0.1%</b>	<b>56</b>	<b>0.2%</b>
<b>Total</b>		<b>9 085</b>	<b>34.6%</b>	<b>17 178</b>	<b>65.4%</b>	<b>26 263</b>	<b>100%</b>

### Circumstances of poisoning

Table 3 shows the circumstances of poisoning in the 26 263 cases with potentially toxic exposure. **Acute accidental intoxications** (19 849, compared to 19 112 in the previous year, +3.8%) represented the largest group. These occurred frequently at home with children ingesting easily accessible household products, pharmaceuticals, or plant parts. Adults too were involved in toxic exposures at home, but a significant number of enquiries involved work place accidents (877).

**Acute intentional poisoning** was mostly due to attempted suicide (3 777 cases, compared to 3 705 in the previous year, +1.9%), less frequently due to drug abuse (442 cases), poisoning incidents in connection with criminal actions however increased significantly (86 cases, 61 in the previous year).

**Chronic poisoning** was relatively rare (700 cases) compared to acute intoxications. **Adverse drug reactions** in therapeutic doses led to 177 information requests. These were mainly related to the establishment of a causal link between the observed symptoms and the medication taken.



Table 3  
Circumstances of toxic exposures

Circumstances of toxic exposures		Acute poisoning (Exposure < 8 h)		Chronic poisoning (Exposure > 8 h)
Accidental domestic	18 165	69.2 %	205	0.8 %
Accidental occupational	877	3.3 %	97	0.4 %
Accidental environmental	18	0.1 %	10	0.04 %
Accidental others	789	3.0 %	57	0.2 %
<b>Total accidental</b>	<b>19 849</b>	<b>75.6 %</b>	<b>369</b>	<b>1.4 %</b>
Intentional suicide	3 777	14.4 %	38	0.1 %
Intentional abuse	442	1.7 %	59	0.2 %
Intentional criminal	86	0.3 %	12	0.05 %
Intentional others	1 063	4.0 %	222	0.8 %
<b>Total intentional</b>	<b>5 368</b>	<b>20.4 %</b>	<b>331</b>	<b>1.3 %</b>
<b>Total accidental and intentional</b>	<b>25 217</b>	<b>96.0 %</b>	<b>700</b>	<b>2.7 %</b>
<b>Total acute and chronic</b>		<b>25 917</b>	<b>98.7 %</b>	
<b>Adverse drug reactions</b>		<b>177</b>	<b>0.7 %</b>	
<b>Unclassifiable</b>		<b>169</b>	<b>0.6 %</b>	
<b>Total</b>		<b>26 263</b>	<b>100 %</b>	

### Agents involved

For analysis, the agents and toxins were split up into twelve groups. Table 4 shows these different groups and how often they were involved in the total of 26 263 poisonings in humans.

Most toxic exposures occurred with pharmaceuticals (36.1 %), followed by household products (25.6 %) and plants (11.8 %). Details of the individual agent groups are available in supplements to the Annual Reports available on our website.

### Severity of poisonings

6 080 enquiries from physicians (69 % of all medical calls) were concerned with cases of expected or already established poisoning. In these cases, the treating physicians received a written follow-up of the telephone consultation, together with a request for feedback on the clinical outcome. The STIC received a report on the outcome in 75 % of these cases. Thus the STIC received additional information, evaluated by physicians, concerning symptoms, clinical outcome and treatment of acute and chronic poisonings which was entered and analysed in our in-house information system.

Table 4  
**Agents involved in all cases of poisonings in humans**

Agents/Age groups	Adults	Children	Age unknown		Total
Pharmaceuticals	5 236	4 249	4	9 489	36.1%
Household products	2 242	4 470	15	6 727	25.6%
Plants	564	2 521	6	3 091	11.8%
Technical and industrial products	1 350	365	9	1 724	6.6%
Cosmetics and personal care products	216	974	3	1 193	4.5%
Food and beverages	542	329	8	879	3.3%
Recreational drugs, alcohol	439	401	1	841	3.2%
Agricultural and horticultural products	366	386	1	753	2.9%
Venomous animals	248	118	-	366	1.4%
Mushrooms	205	142	1	348	1.3%
Veterinary drugs	51	42	-	93	0.4%
Others or unknown agents	555	195	9	759	2.9%
<b>Total</b>	<b>12 014</b>	<b>14 192</b>	<b>57</b>	<b>26 263</b>	<b>100%</b>

Data capture and data evaluation was standardised according to circumstances, causality and severity of poisoning. This annual report only includes poisonings where the causality was confirmed or likely. Confirmed means the toxin has been found in the body, the time course and symptoms are compatible with the toxin, and the symptoms could not be explained by an underlying illness or any other cause. Likely causality fulfils the same criteria, except that the agent has not been detected in the body.

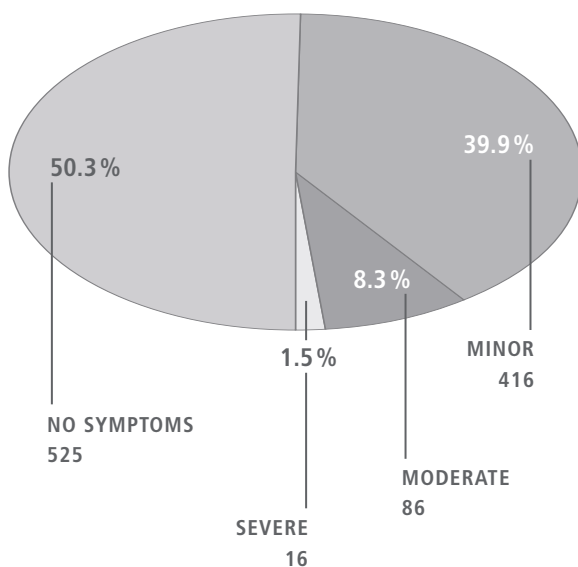
4 020 human cases both asymptomatic and symptomatic with sufficient evidence of causality were analysed further with regard to clinical course.

1 043 cases involved children and 2 977 adults. The severity of these cases is documented in Figure 3 with cases categorised as follows: no symptoms, minor, moderate, severe, or fatal. Minor symptoms generally require no treatment; moderate symptoms usually require treatment, and cases with severe symptoms must always be treated.

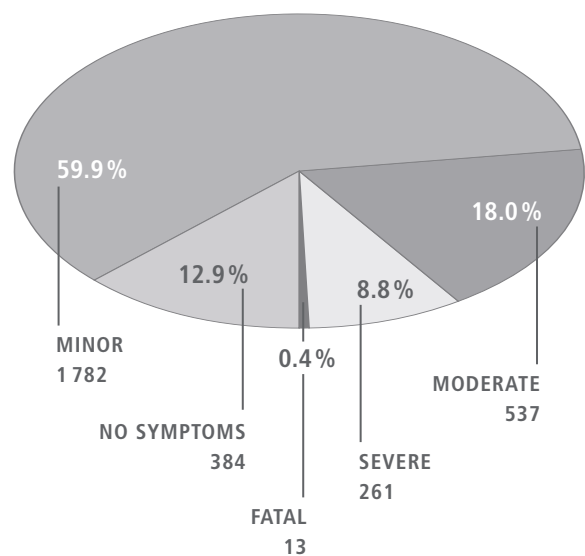


Figure 3  
**Clinical outcome of poisoning cases in children and adults**

**Children (n = 1043)**



**Adults (n = 2977)**



Amongst children, half of the cases (525 = 50.3%) were asymptomatic in contrast to adults where only 384 (19.9%) were asymptomatic. Minor symptoms were observed in 416 children (39.9%) and in 1782 adults (59.9%). Moderate symptoms were seen in 86 children (8.3%) and 537 adults (18.0%). Severe poisoning occurred in 16 children (1.5%) and 261 adults (8.8%). 13 cases in adults had a fatal outcome (0.4%).

Of the 4020 cases where causality was confirmed or likely (Table 5), about three fifths involved ingestion of only one toxin. In two fifths of the cases, two or more agents were involved. For the purpose of this report, these cases have been classified according to the most important agent involved. In those cases where follow up information was received and analysed, pharmaceuticals were again the most frequent cause of poisoning (64.9%), followed by household products (9.6%) and technical and industrial products (8.4%).

Table 5

**Frequency of agent group and severity of human poisoning in cases where medical feedback was received and analysed**

Agent groups Severity of poisoning	Adults					Children					Total	
	N	Mi	Mo	S	F	N	Mi	Mo	S	F		
Pharmaceuticals	275	1 173	369	187	9	308	231	50	8	–	2 610	64.9%
Household products	26	130	22	8	–	109	79	10	–	–	384	9.6%
Technical and industrial products	24	225	41	6	1	11	23	7	–	–	338	8.4%
Recreational drugs, alcohol	16	84	62	45	–	13	13	7	2	–	242	6.0%
Plants	15	24	12	6	1	31	26	5	–	–	120	3.0%
Agricultural and horticultural products	6	17	4	3	–	15	4	1	3	–	53	1.3%
Cosmetics and personal care products	5	15	–	–	–	13	16	2	1	–	52	1.3%
Mushrooms	2	17	12	2	–	12	5	–	–	–	50	1.2%
Venomous animals	5	28	4	–	–	1	8	2	1	–	49	1.2%
Food and beverages	3	5	3	–	–	3	3	–	–	–	17	0.4%
Veterinary drugs	3	7	–	–	–	2	2	–	–	–	14	0.4%
Others or unknown agents	4	57	8	4	2	7	6	2	1	–	91	2.3%
<b>Total</b>	<b>384</b>	<b>1 782</b>	<b>537</b>	<b>261</b>	<b>13</b>	<b>525</b>	<b>416</b>	<b>86</b>	<b>16</b>	<b>0</b>	<b>4 020</b>	<b>100%</b>

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



## Animal poisoning

### Animals involved

The 1 245 calls received concerned the following animal species: 815 dogs, 286 cats, 44 equine animals (horses, ponies, donkeys), 38 bovine animals (calves, cows, cattle, sheep, goats), 28 rodents (chinchilla, degu, hamster, hares/rabbits, rats, chipmunks), 12 guinea pigs, 6 birds (parrots, budgerigars), 4 reptiles (tortoises, snakes), 4 pigs, 2 fish, 2 chickens, 1 camel and 1 lynx. The other cases related to several or unknown animal species.

### Agents involved

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

Table 6

#### Agents involved in calls concerning animals

Agent groups	No. of cases	
Plants	308	24.7 %
Agricultural and horticultural products	270	21.7 %
Human pharmaceuticals	204	16.4 %
Household products	161	12.9 %
Food and beverages	85	6.8 %
Veterinary drugs	78	6.3 %
Technical and industrial products	37	3.0 %
Venomous animals	20	1.6 %
Recreational drugs, alcohol	18	1.4 %
Cosmetics and personal care products	18	1.4 %
Mushrooms	8	0.6 %
Others or unknown agents	38	3.1 %
<b>Total</b>	<b>1 245</b>	<b>100 %</b>

The calls primarily concerned plants (24.7 %) followed by calls relating to agricultural and horticultural products (21.7 %), pharmaceuticals (16.4 %), household products (12.9 %), food and beverages (6.8 %) as well as veterinary drugs (6.3 %).

## Severity of poisonings

Veterinarians were also requested to submit clinical reports on animal poisoning. We received a total of 285 reports which could be analysed. Of those 119 cases remained without symptoms, 93 were classified as minor and 73 cases had moderate, severe or fatal outcomes (Table 7).

Table 7  
Agent groups and severity of animal poisoning

Agent groups	Outcome					Total	
	N	Mi	Mo	S	F		
Agricultural and horticultural products	33	23	8	13	7	84	29.5%
Pharmaceuticals	34	24	6	2	1	67	23.5%
Veterinary drugs	15	16	6	5	2	44	15.4%
Plants	13	9	3	2	4	31	10.9%
Food and beverages (except mushrooms and alcohol)	11	4	2	5	–	22	7.7%
Household products	8	8	4	–	–	20	7.0%
Technical and industrial products	3	5	1	2	–	11	3.9%
Recreational drugs, alcohol	1	2	–	–	–	3	1.0%
Venomous animals	1	1	–	–	–	2	0.7%
Cosmetics and personal care products	–	1	–	–	–	1	0.4%
Mushrooms	–	–	–	–	–	0	0.0%
Others or unknown agents	–	–	–	–	–	0	0.0%
<b>Total</b>	<b>119</b>	<b>93</b>	<b>30</b>	<b>29</b>	<b>14</b>	<b>285</b>	<b>100%</b>

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



## Other activities

### Services

The STIC was contracted to provide principally the following services:

1. compilation of expert reports paying particular attention to unpublished experience of the STIC
2. toxin-based anonymised case reports for the pharmaceutical and chemical industry
3. handling medical emergency advice for Swiss products abroad (utilising safety data sheets and transport documentation) while having detailed product information available
4. provision of medical emergency advice outside office hours for the pharmaceutical and chemical industry including unblinding in randomized clinical trials
5. distribution of printed materials, in particular 10 496 pamphlets.

The fee-for-service doping hotline for athletes whose establishment was mandated by Swiss Olympic was utilised 444 times.

The web site was visited 153 250 times (previous year 206 637). This decrease occurred for technical reasons following the change over of the website at the end of 2006. Since then the number of hits has increased again continuously.

Senior medical staff regularly carry out clinical toxicological consultations at the Department of Internal Medicine of the University Hospital Zurich (mostly on emergency and intensive care wards).

### Teaching and continuing education

The STIC continues its collaboration with the Division of Clinical Pharmacology and Toxicology at the University Hospital Zurich headed by Prof. Gerd Kullak-Ublick. Academic staff of the STIC continue to participate regularly and actively in the continuing education activities in clinical pharmacology and toxicology.

For the first time H. Kupferschmidt contributed to the training of medical students as a lecturer in the 3<sup>rd</sup> and 4<sup>th</sup> year of their studies covering the subjects of general and special clinical toxicology respectively. Permanent academic staff regularly gave presentations in clinical toxicology for the postgraduate and continuing education of physicians and other members of the medical profession and professional organisations.

Five scientific contributions were presented at the annual conference of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) in Athens. H. Kupferschmidt gave a lecture on hymenopteran envenomation at the annual conference of the North American Congress of Clinical Toxicology (NACCT) in New Orleans. A poster and workshop on mushroom poisonings were presented at the 75<sup>th</sup> Annual Meeting of the Swiss Society for Internal Medicine and the Swiss Society for Clinical Pharmacology and Toxicology in Lausanne.

### Research projects

The main focus of the STIC's research efforts continues to be dose-effect relationships in human poisonings, in particular relating to drug overdose. An investigation on poisonings with clozapine and quetiapine was commenced as part of a master thesis in pharmaceuticals. The three year study entitled «Multi-centre Data Collection in European Poison Centres Using Paraquat as an Example» was continued in its second year. Interim results of the first 18 months were presented at the EAPCCT conference in Seville in 2008. H. Kupferschmidt represents the EAPCCT in an international project entitled «Development of an Alerting System and the Criteria for Development of a Health Surveillance System for the Deliberate Release of Chemicals by Terrorists (ASHT)» of the European Commission which will result in a Rapid Alerting System for Chemical Releases (RAS-Chem). A follow-on project was accepted by the European Commission. The project «EAPCCT Monitor – Pilot Project for common European poisoning data collection» will be incorporated into this new project.



## Collaborations

**Universities:** Apart from collaborating with the Division of Clinical Pharmacology and Toxicology at the University Hospital Zurich, the STIC is a member of the Centre for Xenobiotic and Environmental Risk Research at the ETH/University (XERR). This collaboration increases staff competence in general and special toxicological questions and offers the opportunity to pass enquiries on to other specialists within this centre of excellence.

Poisonings in animals were handled in part jointly with the Institute for Veterinary Pharmacology and Toxicology of the University of Zurich. A veterinarian from this Institute, J. Kupper, works part-time at the STIC and is responsible for the areas of plant toxicology and veterinary poisonings.

**Authorities:** It is the state's responsibility to protect its population from exposure to dangerous chemicals. By systematically gathering and evaluating incident data, necessary measures can quickly be taken to limit any potential damage and to recommend amendments to existing legislation to avoid such incidents in future. The new chemicals law has abolished comprehensive authorisation and registration of all compounds and preparations. Correspondingly, new ways had to be found to ensure protection of the population's health, and the STIC has taken on parts of these. This involves particularly the availability of a Poison Centre for exposures with chemicals and compounds covered by this law. The Federal Office of Public Health (FOPH) benefits from the competence and 24 hour service of the STIC, and the STIC in exchange benefits from access to the database and search requests by the Federal Office of Public Health. As part of a service level agreement the STIC has constant access to the confidential data in the Federal Office of Public Health's product database Indatox Plus.

Due to budgetary cuts the framework contract with the Federal Office of Public Health (FOPH) had to be replaced by a follow-on contract with reduced responsibilities. No long-term solution could be found with regard to its funding. Under the new contract the STIC continues to report to the

BAG on a quarterly basis on exposure to hazardous substances and products. The new online edition of «Toxicology of Household Products» had to be stopped.

S. Lüde and H. Kupferschmidt are members of the working group «Selected Foreign Substances and Ingredients in Foods» (AFIL) of the Federal Office of Public Health.

The Swiss Agency for Therapeutic Products (**Swissmedic**) has contracted the STIC to ensure toxicovigilance for pharmaceuticals. This helps Swissmedic in the early detection, risk assessment, handling and prevention of poisoning with animal and human medicines. The STIC notifies Swissmedic of new or unusual toxicity and prepares a quarterly analysis on poisoning with pharmaceuticals as well as abuse of drugs and medicines. The STIC thus plays an important role in ensuring drug safety in the areas of overdose and misuse.

The STIC collates information on undesired drug effects as part of the national pharmacovigilance network in collaboration with the Division of Clinical Pharmacology and Toxicology at the University Hospital Zurich.

**International:** The STIC collaborates closely with partner poison centres abroad and gains access to other networks (such as Toxbase in the UK and Toxinz in New Zealand). It is represented in working groups of the Society for Clinical Toxicology representing German-speaking poison centres whose current president is A. Stürer. The STIC is also represented in the Executive Committee of the European Association of Poison Centres and Clinical Toxicologists (EAPCCT). H. Kupferschmidt has been president of the association since May 2008 and has been the association's webmaster for several years now.



## ■ The Swiss Antidote Network

Distribution and storage of antidotes in Switzerland is uniformly regulated by order of the Swiss conference of the cantonal directors of public health (CDS). Information on the individual antidotes and their availability is published regularly in the Swiss List of Antidotes. Antidotes are classified in three complementary categories based on the frequency of poisonings, on the location where an antidote is needed, and its availability. In general antidotes are only included in the list if they do not belong to standard range available at pharmacies in the community and in hospitals.

The inclusion criteria stipulate that:

1. the substance is used as a classic antidote;
2. the substance used as an antidote is not commonly available in hospitals;
3. the quantity of the drug if administered as an antidote exceeds the quantity that is usually available in hospitals for therapeutic use;
4. the use of the drug as an antidote is not well known. The Swiss List of Antidotes does not aim to be fully comprehensive, but wants to ensure the safe and rapid availability of the selected substances.

**News 2008:** The case of a fatal poisoning with mercury cyanate where oral administration of a heavy metal chelating agent was not possible due to mucous membrane lesions has shown that a parenteral chelating agent for mercury poisonings was missing in the selection of antidotes available in Switzerland. DMPS (**Dimaval**<sup>®</sup>) ampoules have therefore been added to the list in 2008 (available at regional centres). However, for some time DMPS ampoules and capsules have not been available. DMPS ampoules are available in the pharmacy of the armed forces or from the manufacturer who guarantees emergency supplies. Patients with mercury or lead poisonings can be treated with DMSA (succimer) or calcium disodium EDTA as an alternative.

The manufacturer of **pyridoxin** 300 mg ampoules has ceased production of this product so that only 100 mg ampoules are now available. For poisonings with isoniazid (INH) and mono methyl hydrazin (poisonings with false morel; gyromitra syndrome), these ampoules are to be used if 300 mg or 1 g ampoules cannot be obtained abroad or through production at home.

Recently the use of 20% lipid emulsions (for example Intralipid<sup>®</sup>) has been reported in scientific journals for the treatment of cardiac toxicity of lipophilic local anaesthetics (mainly bupivacain) but also in isolated cases with other substances (clomipramin, amitriptylin, verapamil, propranolol, bupropion). Clinical cases were reported where accidental intravascular administration of local anaesthetics led to bradycardia, hypotension and asystole. These symptoms disappeared almost instantaneously following intravenous administration of 20% lipid emulsion, presumably caused by dissolution of the local anaesthetic in the substantial amount of lipids («lipid sink»). However, there are not enough data available for other substances in order to be able to recommend this method of decontamination as a routine.

Table 8

**The categories of antidotes on the Swiss Antidote List**

**Basic supply available at pharmacies in the community:** activated charcoal, biperidene (tablets), calcium gluconate (hydrogel), simeticone (drops or tablets).

**Basic supply available at hospital pharmacies:** amyl nitrite, atropine (1 ml), biperidene (ampoules), calcium gluconate (ampoules), colestyramine, dantrolene, ethanol, flumazenil, glucagon, insulin, magnesium, N-acetylcysteine (vials), naloxone, sodium bicarbonate, sodium polystyrene sulfonate, neostigmine, phytomenadione (vit. K), pyridoxine (vit. B<sub>6</sub>).

**Additionally available at regional centres:** atropine (100 ml), calcium-disodium-EDTA, desferrioxamine, digitalis antidote, dimethylaminophenol (4-DMAP), dimercaptopropane sulfonate (DMPS, Unithiol), dimercaptosuccinic acid (DMSA, Succimer), iron-(III)-hexacyanoferrate(II) (Prussian blue), fomepizole, hydroxycobalamine, methylene blue, octreotide, obidoxime, phentolamine, physostigmine salicylate, silibinin, sodium thiosulfate.

Regional centres and their telephone numbers are included in the list.

**Special supplies:** The availability of antivenins for venomous snake bites can be seen on the list of the Swiss Antivenin Depot Network ANTIVENIN-CH ([www.toxi.ch](http://www.toxi.ch)).

Botulinus- and Diphtheria-Antitoxin are stored at the Swiss Army's pharmacy and can be obtained via STIC.

The Swiss Antivenin Depot Network ANTIVENIN-CH comprises the pharmacies of the University hospitals in Berne (Inselspital), Geneva and Zurich, the cantonal hospitals in Chur and Münsterlingen, and the Ospedale San Giovanni in Bellinzona.

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

The Swiss List of Antidotes is updated annually by a special working group of the STIC and the Swiss Association of Hospital Pharmacists. It is published in the Bulletin of the Swiss Federal Office of Public Health and can also be viewed on the Internet at «[www.toxi.ch](http://www.toxi.ch)» or at «[www.pharmavista.net](http://www.pharmavista.net)».

Members of the working group are L. Cingria (Geneva), M. Eggenberger (Aarau), C. Fähr (Winterthur), Ch. Rauber-Lüthy (Zurich), A. Züst (Zurich) and H. Kupferschmidt (Chairman, Zurich).



## Publications

	Order number		Order number
<b>Antidote bei Vergiftungen 2007.</b> Fäh C., Vernaz N., Rauber-Lüthy Ch., Mühlebach S., Züst A., Eggenberger M., Kupferschmidt H. Bulletin Bundesamt für Gesundheit 5, 77-89, 2007.	1-07	<b>Carbofuran-Vergiftung bei wildlebenden Stockenten.</b> Kupper J., Baumgartner M., Bacciarini LN., Hoop R., Kupferschmidt H., Naegeli H. Schweizer Archiv für Tierheilkunde 149 (11): 517-520, 2007.	14-07
<b>Antidote bei Vergiftungen 2007.</b> Kupferschmidt H. Schweizerische Ärztezeitung 88 (6), 235-237, 2007.	2-07	<b>Die akute Intoxikation mit Mefenaminsäure.</b> Laredo P.B. Thesis University of Zurich, 2007, p. 37.	15-07
<b>Antidote bei Vergiftungen 2007.</b> Kupferschmidt H. pharmaJournal 145 (5), 5-7, 2007.	3-07	<b>Vergiftungen von A(mylnitrit) bis Z(olpidem).</b> Lüde S., Kupper J., Kupferschmidt H., Rauber-Lüthy Ch. pharmaJournal 145 (19): 21-23, 2007.	16-07
<b>Antidota bei Vergiftungen 2007.</b> Kupferschmidt H. GSASA Journal 20: 6-7, 2007.	4-07	<b>Amanita-phalloides-Vergiftung.</b> Misselwitz B., Müllhaupt B., Maggiorini M., Kupferschmidt H., Seebach JD. Swiss Medical Forum 7: 49-54, 2007.	17-07
<b>Antidot bei Digitalisintoxikation.</b> Kupferschmidt H., Rauber-Lüthy Ch. Swiss Medical Forum 7 (9): 237-238, 2007.	5-07	<b>Gemeldete unerwünschte Wirkungen von Tierarznei- mitteln im Jahr 2006.</b> Müntener CR., Bruckner L., Gassner B., Stürer A., Demuth DC., Althaus FR., Zwahlen R. Schweizer Archiv für Tierheilkunde 149 (10): 439-448, 2007.	18-07
<b>Vergiftungen in der Schweiz 2006.</b> Kupferschmidt H. pharmaJournal 145 (6), 27, 2007.	6-07	<b>Distribution of polychlorinated biphenyls and polybrominated diphenyl ethers in birds of prey from Switzerland.</b> Naert C., Van Peteghem C., Kupper J., Jenni L., Naegeli H. Chemosphere 68: 977-987, 2007.	19-07
<b>Vergiftungen in der Schweiz. Zum Jahresbericht 2006.</b> Kupferschmidt H., Reust H., Kupper J., Lüde S., Stürer A., Rauber-Lüthy Ch. Schweizerische Ärztezeitung 88 (48): 2040-2044, 2007.	7-07	<b>Harmonization of categorization systems for agents: First data from German poisons centers (Abstract).</b> Stürer A., Hüller G., Reinecke HJ., Seidel C., Stedtler U., Wagner R., Ganzert M., Wurm D., Hahn A., Desel H. Clinical Toxicology 45 (4), 337, 2007.	20-07
<b>Vergiftungen mit Chemikalien.</b> Kupferschmidt H. SGOS 3: 33-38, 2007.	8-07	<b>Die globale Erwärmung treibt ihre Blüten – oder Pilze.</b> Thaler T., Aceto L., Egloff M., Müllhaupt B., Kupferschmidt H., Greutmann M. Swiss Medical Forum 7 (Suppl. 35): 555, 2007.	21-07
<b>Health economic aspects of poisons centre work (Abstract).</b> Kupferschmidt H. Clinical Toxicology 45 (4), 356-357, 2007.	9-07		
<b>Place for endoscopy in gastrointestinal decontamination (Abstract).</b> Kupferschmidt H. Clinical Toxicology 45 (4), 353, 2007.	10-07		
<b>An EAPCCT pilot project for Europe-wide common data collection in poison centres (Abstract).</b> Kupferschmidt H., Bateman DN., Hantson P. Clinical Toxicology 45 (4), 355, 2007.	11-07		
<b>Participation of poisons centres in a pilot project for common data collection (Abstract).</b> Kupferschmidt H. Clinical Toxicology 45 (4), 369, 2007.	12-07		
<b>Intoxication-induced coma.</b> Kupferschmidt H. In: Siegenthaler W.: Differential diagnosis in Internal Medicine, Georg Thieme Verlag, Stuttgart, 2007, 1005-1008.	13-07		

The publications listed above may be ordered quoting the relevant order numbers via telephone (+41 44 251 6666), fax (+41 44 252 88 33), or by e-mail to [info@toxi.ch](mailto:info@toxi.ch).

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

## Income and expenditure

Income CHF 2 619 316.–

Expenditure CHF 2 778 994.–

### SERVICE LEVEL CONTRACTS WITH FEDERAL OFFICE OF PUBLIC HEALTH AND SWISSMEDIC

CHF 310 000.–

#### INCOME FROM CONTRACT WORK

CHF 157 405.–

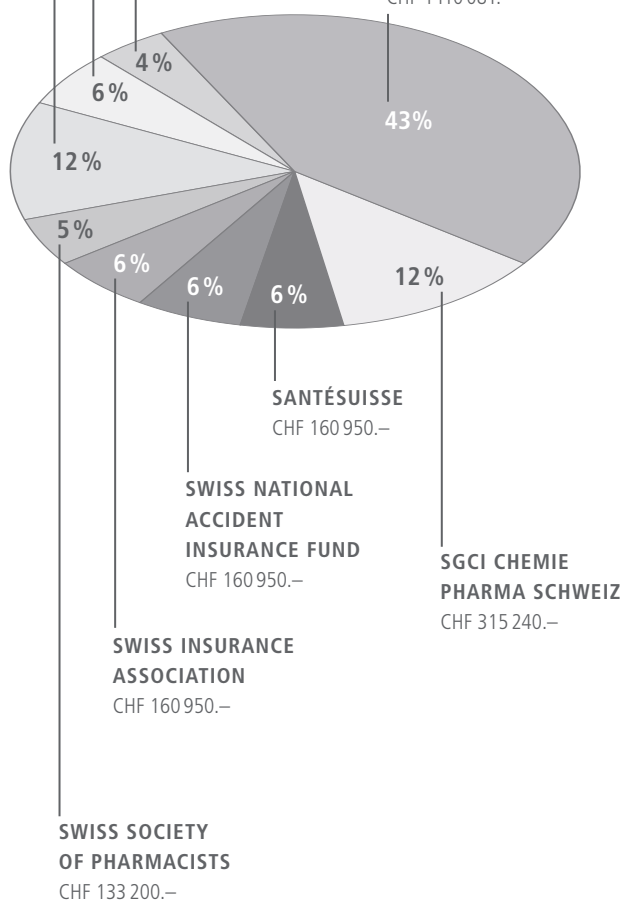
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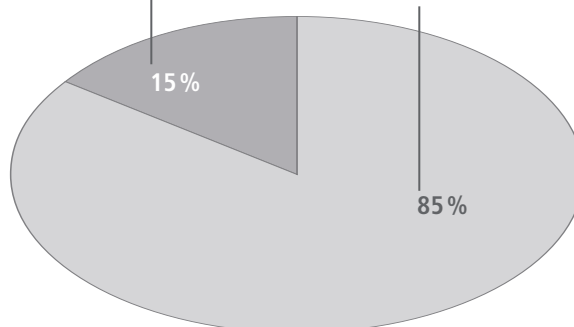
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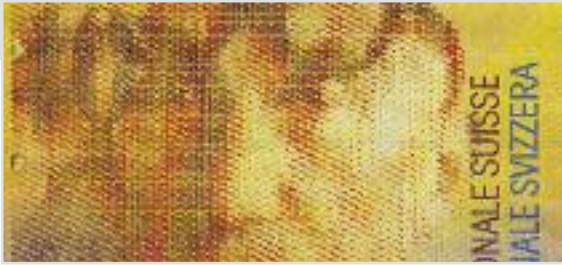
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#### SALARY COSTS

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## ■ Donations

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- the Swiss Society of Pharmacists (SSP)
- the SGCI Chemie Pharma Schweiz
- the Swiss National Accident Insurance Fund (SNAIF)
- the Swiss Insurance Association (SIA)
- the santésuisse (SAS).

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

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## Advisers

Numerous experts from hospitals, institutes, state and federal organisations act as honorary advisers, most notably Jean-Pierre Lorent (former Director of the STIC), Dr. Martin Wilks (Syngenta), Prof. Dr. med. Philippe Hotz (University of Zurich, occupational and environmental medicine) and Hanspeter Neukom (Kantonales Labor Zurich, mycologist).

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