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CAUSTIC EXPOSURES REPORTED TO THE BELGIAN POISON CENTRE

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The Belgian Poison Centre is commonly consulted for exposures to caustic substances, potentially causing important injuries and a heavy psychological and economic burden. Nevertheless, no systematic study has so far been published to estimate their incidence. In this preliminary study, we aim to identify (1) the main products involved and (2) the relevant variables to organise a surveying system.

Call files recorded between 01/01/2014 and 30/06/2014 were screened. Only actual exposures were included. Agents were limited to household, industrial and plant protection products and to biocides. Veterinary and voluntary exposures were excluded. Only one call was counted for a single event. All cases were analysed manually to identify any potential caustic exposure, based upon the product composition as present in our database and upon the detailed case record. For the period up to 10/03/2014 an exploratory follow-up was performed by telephone if judged useful and if technically possible.

Of the 6296 exposures selected in the first phase, 628 were retained as potentially caustic. A successful follow-up by telephone was performed in 96 cases.

We collected 121 (19.3%) occupational and 507 (80.7%) domestic cases. The main injury causing chemicals were acids (180/628, 28.7%) and bases (238/628, 37.9%), especially inorganic bases (181/628, 28.8%). For the household exposures only, there was a clear preponderance of bases (194/507, 38.3%) over acids (136/507, 26.8%). We found 127 children in our domestic series (25.0%). The most frequently involved products were drain cleaners (103/628, 16.4%).

There was an obvious predominance of dermal exposures in the professional group (76/121, 62.8%), with the remaining mainly ocular (39/121, 32.2%). We observed a more equal distribution of exposure routes in domestic cases with 212 dermal (41.8%), 144 (per)oral (28.4%) and 139 (27.4%) ocular exposures. The remaining cases involved multiple routes.

The most striking symptoms were dermal burns with respectively 8 third degree burns, 50 second degree burns and 110 burns of first or unspecified degree. There were 46 cases with eye pain, 23 with vision defects or corneal lesions and 5 with eyelid oedema. Additionally, there were 33 oral or oesophageal burns.

Route of exposure

	Private cases		Occupational cases	
	Absolute	% of category	Absolute	% of category
Adults	380	100.0	121	100.0
Skin	171	45.0	76	62.8
Eyes	120	31.6	39	32.2
(Per)oral	81	21.3	3	2.5
Mixed	5	1.3	3	2.5
Respiratory	3	0.8		
Children	127	100.0		
(Per)oral	63	49.6		
Skin	41	32.3		
Eyes	19	15.0		
Mixed	4	3.1		

Agents

	Children		Adults
	Private	Occupational	Private
Base	54	44	141
Inorganic	39	35	106
Mixed / unspecified	12	6	4
Organic	-	1	6
Ammonia	3	2	25
Acid	38	44	97
Hydrogen fluoride	1	6	9
Inorganic	20	21	58
Mixed / unspecified	7	2	10
Nitric acid	3	5	8
Organic	7	10	12
Hypochlorite	25	9	80
Liquid	18	7	74
Solid	7	1	5
Unspecified	-	1	1
Quaternary ammonium compound	5	6	24
(Un)hydrated lime and cement	2	1	11
Unspecified / others	3	17	27

Symptoms (*)

	623	Occupational exposures	157
Private exposures			
Eye irritation	109	Skin burns, not specified	35
Skin irritation	85	Eye irritation	32
Skin burns, not specified	75	Skin irritation	20
Mouth/throat irritation or salivation	39	Skin burns, 2 nd degree	16
Eye pain	35	Eye pain	11
Skin burns, 2 nd degree	34	Vision loss or corneal damage	9
Burns lips, mouth or oesophagus	31	Skin discoloration	4
Vomiting	20	Pain	4
Pain	16	Skin burns, 3 rd degree	3
Vision loss or corneal damage	14	Oedema	3
Tear	11	Burns lips, mouth or oesophagus	2
Other symptoms	9	Others	2
Skin discoloration	8	Eyelid oedema	2
Airway irritation	7	Breath shortness	1
Skin burns, 3 rd degree	5	Mouth/throat irritation or salivation	1
Eyelid oedema	3		
No symptoms	91	No symptoms	6
Unknown	19	Unknown	4

(*) = number of exposures

CONCLUSION

We received 628 calls for accidental caustic exposures over one semester with often significant consequences, confirming that caustic burns are a real public health problem because of their frequency and severity. Acids and bases, especially inorganic bases, were the main causative substances. Drain cleaners were most frequently involved. These data illustrate the need for preventive and regulatory action.