

# Toxalert

UNIVERSITY OF MARYLAND AT BALTIMORE SCHOOL OF PHARMACY

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## MARYLAND POISON CENTER 1991 STATISTICAL REPORT

The Maryland Poison Center (MPC) is a division of the University of Maryland School of Pharmacy and is designated by Maryland as the state's official poison center. In addition, the MPC serves as a specialty resource center in the Maryland Institute for Emergency Medical Services Systems and is certified by the American Association of Poison Control Centers

as a regional poison center. This report presents an overview of MPC poisoning data for 1991. Additional information is available upon request. In 1991, the MPC received 53,869 calls. While 34,373 of these calls involved a human exposure, the remaining 19,496 were requests for information where no exposure had occurred.

### AGE

The majority of poison exposures (61.1%) involve children under the age of five. Although the incidence of poisoning is greater in children, most severe poisonings and poisoning deaths occur in adolescents and adults.

| Age (Years)  | Number        | %           |
|--------------|---------------|-------------|
| <1           | 2,361         | 6.9         |
| 1            | 7,026         | 20.4        |
| 2            | 7,196         | 20.9        |
| 3            | 3,174         | 9.2         |
| 4            | 1,256         | 3.7         |
| 5            | 641           | 1.9         |
| 6-12         | 1,710         | 4.9         |
| 13-19        | 2,190         | 6.3         |
| 20-29        | 2,494         | 7.3         |
| 30-39        | 2,062         | 6.0         |
| 40-49        | 924           | 2.7         |
| 50-59        | 425           | 1.2         |
| 60-69        | 307           | 0.9         |
| ≥ 70         | 386           | 1.1         |
| Unknown      | 2,221         | 6.5         |
| <b>Total</b> | <b>34,373</b> | <b>99.9</b> |

|              | Total Calls   | %            | Exposures     | Inquiries     |
|--------------|---------------|--------------|---------------|---------------|
| January      | 4,396         | 8.2          | 2,898         | 1,498         |
| February     | 3,995         | 7.4          | 2,589         | 1,406         |
| March        | 4,629         | 8.6          | 2,934         | 1,695         |
| April        | 4,543         | 8.4          | 2,908         | 1,635         |
| May          | 4,931         | 9.1          | 3,176         | 1,755         |
| June         | 4,508         | 8.4          | 2,864         | 1,644         |
| July         | 4,687         | 8.7          | 3,026         | 1,661         |
| August       | 4,829         | 8.9          | 3,050         | 1,779         |
| September    | 4,581         | 8.5          | 2,988         | 1,593         |
| October      | 4,341         | 8.1          | 2,744         | 1,597         |
| November     | 4,253         | 7.9          | 2,750         | 1,503         |
| December     | 4,176         | 7.8          | 2,446         | 1,730         |
| <b>Total</b> | <b>53,869</b> | <b>100.0</b> | <b>34,373</b> | <b>19,496</b> |

### GEOGRAPHIC DISTRIBUTION

Overall 97.5% of exposure calls occurred in Maryland. In addition, the MPC received calls from 17 states and the District of Columbia. The distribution within Maryland is:

| Area of Maryland  | Number | %    |
|-------------------|--------|------|
| Allegany County   | 110    | 0.5  |
| Anne Arundel Co.  | 2,995  | 12.4 |
| Baltimore County  | 4,184  | 17.3 |
| Baltimore City    | 5,300  | 22.0 |
| Calvert County    | 387    | 1.6  |
| Caroline County   | 129    | 0.5  |
| Carroll County    | 1,076  | 4.4  |
| Cecil County      | 550    | 2.3  |
| Charles County    | 516    | 2.1  |
| Dorchester County | 144    | 0.6  |
| Frederick County  | 677    | 2.8  |
| Garrett County    | 134    | 0.6  |
| Harford County    | 1,355  | 5.6  |
| Howard County     | 1,051  | 4.3  |
| Kent County       | 103    | 0.4  |
| Montgomery Co.    | 1,743  | 7.2  |

### SEX

Examination of calls where the sex is documented shows 50.4% male, 49.3% female and 0.3% unknown.

### CALLER

Of the calls to the MPC, (81.0%) come from the general public, (14.7%) from physicians and nurses, and (4.3%) come from paramedics, EMT's, pharmacists and others.

*continued*



## Personnel Changes

The Maryland Poison Center is pleased to announce that Carla M. Goetz, Pharm.D., has been appointed as Assistant Director of the Poison Center and Assistant Professor in the Department of Clinical Pharmacy at the School of Pharmacy, University of Maryland at Baltimore. Prior to accepting this position, Dr. Goetz was an Assistant Professor of Clinical Pharmacy at Duquesne University in Pittsburgh, Pennsylvania. Dr. Goetz is a 1985 graduate of Duquesne University. Upon receiving her Bachelor of Science Degree in Pharmacy she completed a Specialized Residency in Poison and Drug Information at the Rhode Island Hospital in Providence, Rhode Island. She returned to Duquesne University to complete her Doctor of Pharmacy degree in 1988, continued her education at the University of Pittsburgh and in 1989 finished a fellowship in Clinical Toxicology.

Dr. Goetz is a member of the Maryland Society of Hospital Pharmacists, Pennsylvania Society of Hospital Pharmacists, American Academy of Clinical Toxicology, and the American Association of Colleges of Pharmacy.

| Area of Maryland   | Number        | %            |
|--------------------|---------------|--------------|
| Prince Georges Co. | 1,706         | 7.0          |
| Queen Annes Co.    | 167           | 0.7          |
| Saint Marys Co.    | 468           | 1.9          |
| Somerset County    | 81            | 0.3          |
| Talbot County      | 192           | 0.8          |
| Washington Co.     | 423           | 1.7          |
| Wicomico Co.       | 392           | 1.6          |
| Worcester County   | 258           | 1.1          |
| Unknown County     | 9,358         | 27.9         |
| Maryland Total     | 33,499        | 97.5         |
| Other States       | 363           | 1.1          |
| Unknown State/Co.  | 511           | 1.5          |
| <b>Total</b>       | <b>34,373</b> | <b>100.1</b> |

### CIRCUMSTANCE

Acute exposures account for 99% of the total calls while the remaining 1% are chronic exposures. The specific reasons for the exposures are:

| Reason                  | Number        | %            |
|-------------------------|---------------|--------------|
| <i>Unintentional</i>    |               |              |
| General                 | 25,105        | 73.0         |
| Occupational            | 632           | 1.8          |
| Environmental           | 328           | 1.0          |
| Misuse                  | 2,358         | 6.9          |
| Unknown                 | 38            | 0.1          |
| <b>Total</b>            | <b>28,461</b> | <b>82.8</b>  |
| <i>Intentional</i>      |               |              |
| Suicidal                | 3,842         | 11.2         |
| Misuse                  | 690           | 2.0          |
| Abuse                   | 274           | 0.8          |
| Unknown                 | 581           | 1.7          |
| <b>Total</b>            | <b>5,387</b>  | <b>15.7</b>  |
| <i>Adverse Reaction</i> |               |              |
| Drug                    | 292           | 0.8          |
| Food                    | 63            | 0.2          |
| Other                   | 29            | 0.1          |
| <b>Total</b>            | <b>384</b>    | <b>1.1</b>   |
| Unknown                 | 141           | 0.4          |
| <b>Total</b>            | <b>34,373</b> | <b>100.0</b> |

### SITE OF EXPOSURE

The most common site of exposure is the residence.

| Site of Exposure     | Number        | %            |
|----------------------|---------------|--------------|
| Residence            | 31,785        | 92.5         |
| Workplace            | 786           | 2.5          |
| School               | 392           | 1.1          |
| Health Care Facility | 272           | 0.8          |
| Other                | 569           | 1.7          |
| Unknown              | 569           | 1.7          |
| <b>Total</b>         | <b>34,373</b> | <b>100.0</b> |

### TREATMENT LOCATION

Patients were treated both in the home and in a variety of health care settings.

| Treatment Location             | Number        | %            |
|--------------------------------|---------------|--------------|
| Non Health Care Facility (HCF) | 24,039        | 69.9         |
| Referred to HCF by MPC         |               |              |
| Treated & Released             | 1,799         |              |
| Admitted for Medical Care      | 381           |              |
| Admitted for Psych Care        | 119           |              |
| Refused Referral               | 478           |              |
| Lost to Follow Up              | 317           |              |
| <b>Total Referred</b>          | <b>3,094</b>  | <b>9.0</b>   |
| Patient Already in HCF         |               |              |
| Treated & Released             | 3,295         |              |
| Admitted for Medical Care      | 1,886         |              |
| Admitted for Psych Care        | 805           |              |
| Lost to Follow Up              | 228           |              |
| <b>Total Already in HCF</b>    | <b>6,214</b>  | <b>18.1</b>  |
| Other                          | 739           | 2.1          |
| Unknown                        | 287           | 0.8          |
| <b>Total</b>                   | <b>34,373</b> | <b>100.0</b> |

### ROUTE OF EXPOSURE

Exposures occur by several routes with the majority resulting from ingestions.

| Route of Exposure | Number        | %            |
|-------------------|---------------|--------------|
| Oral              | 29,340        | 80.8         |
| Ocular            | 2,597         | 7.2          |
| Dermal            | 2,408         | 6.6          |
| Inhalation        | 1,301         | 3.6          |
| Bite/Sting        | 488           | 1.3          |
| Parenteral        | 104           | 0.3          |
| Other             | 46            | 0.1          |
| Unknown           | 34            | 0.1          |
| <b>Total</b>      | <b>36,318</b> | <b>100.0</b> |

### MEDICAL OUTCOME

The medical outcome is assessed based on the inherent toxicity of the agent and the severity of the clinical manifestations.

| Medical Outcome     | Number        | %            |
|---------------------|---------------|--------------|
| No Effect/Non Toxic | 20,539        | 59.8         |
| Minor Effect        | 8,950         | 26.0         |
| Moderate Effect     | 733           | 2.1          |
| Major Effect        | 251           | 0.7          |
| Death               | 21            | 0.1          |
| Unrelated Effect    |               |              |
| Unknown             | 559           | 1.6          |
| Potentially Toxic   | 3,320         | 9.7          |
| <b>Total</b>        | <b>34,373</b> | <b>100.0</b> |

### AGENTS INVOLVED

A single substance was involved in 90.5% of the cases. Up to twelve substances were taken in the other cases. Exposures to drugs accounted for 47.4% of the calls.

| Agents Involved                                 | Number        |
|---|---------------|
| <i>Drugs</i>                                    |               |
| Analgesics                                      | 4,076         |
| Anesthetics                                     | 101           |
| Anticholinergics                                | 77            |
| Anticoagulants                                  | 18            |
| Anticonvulsants                                 | 309           |
| Antidepressants                                 | 948           |
| Antihistamines                                  | 751           |
| Antimicrobials                                  | 1,157         |
| Asthma Therapies                                | 407           |
| Cardiovascular Drugs                            | 627           |
| Cough and Cold Preparations                     | 2,191         |
| Diuretics                                       | 144           |
| Electrolytes/Minerals                           | 329           |
| Eye, Ear, Nose & Throat Preparations            | 289           |
| Gastrointestinal Preparations                   | 805           |
| Hormone Products                                | 599           |
| Muscle Relaxants                                | 228           |
| Radioisotopes                                   | 1             |
| Sedative/Hypnotics/Anti-Anxiety/Anti-Psychotics | 1,632         |
| Stimulants/Street Drugs                         | 458           |
| Topicals  | 1,267         |
| Veterinary Products                             | 56            |
| Vitamins  | 884           |
| Miscellaneous                                   | 182           |
| Unknown Drugs                                   | 164           |
| <b>Total Drugs</b>                              | <b>17,700</b> |
| <i>Non-Drugs</i>                                |               |
| Adhesives, Glues, Cements                       | 322           |
| Alcohols  | 1,384         |
| Arts, Crafts, Writing Products, Office Supplies | 636           |
| Automotive Products                             | 211           |
| Batteries                                       | 144           |
| Bites and Envenomations                         | 529           |
| Building and Construction Products              | 143           |
| Chemicals                                       | 753           |
| Cleaning Substances - Household                 | 3,828         |



### Current Staff Members

DIRECTOR: Wendy Klein-Schwartz, Pharm.D. ASSISTANT DIRECTOR: Carla M. Goetz, Pharm.D.  
 MEDICAL DIRECTOR: Richard L. Gorman, M.D. SPECIALISTS IN POISON INFORMATION: Lisa L. Booze, BSPharm, CSPI\*,  
 Scott Ceccorulli, BSPharm., Jeff Farace, BSPharm., Lyn Goodrich, BSN, R.N., CSPI\*, Angel Kuba, BSPharm, CSPI\*,  
 Ed Kucharski, BSPharm, CSPI\*, Paula Lyons, M.D., CSPI\*, Eric Schuetz, BSPharm., Kevin Simmons, R.N., CSPI\*,  
 Paul Starr, BSPharm., CSPI\* ADMINISTRATIVE AIDE: Annette L. Hurst MARYLAND GREEN THUMB VOLUNTEER: Goldie  
 Henderson OFFICE ASSISTANT: Darren Stokes

\*AAPCC Certified Specialist in Poison Information

The MPC also employs part-time health professional students to provide additional coverage for the emergency telephones.

| Agents Involved                             | Number |
|---|--------|
| Cleaning Substances - Industrial            | 129    |
| Cosmetics and Personal Care Products        | 3,552  |
| Deodorizers                                 | 387    |
| Dyes  | 50     |
| Essential Oils                              | 58     |
| Fertilizers                                 | 133    |
| Fire Extinguishers                          | 47     |
| Food Products and Food Poisoning            | 268    |
| Foreign Bodies                              | 1,184  |
| Fumes, Gases, Vapors                        | 322    |
| Fungicides                                  | 15     |
| Heavy Metals (excluding iron)               | 91     |
| Herbicides                                  | 61     |
| Hydrocarbons                                | 1,028  |
| Insecticides                                | 744    |
| Lacrimators                                 | 225    |
| Matches/Fireworks/Explosives                | 63     |
| Mothballs                                   | 153    |
| Mushrooms                                   | 172    |
| Paints, Varnishes, Lacquers                 | 381    |
| Photographic Products                       | 18     |
| Plants                                      | 1,754  |
| Polishes and Waxes                          | 170    |
| Rodenticides                                | 277    |
| Sporting Equipment                          | 5      |
| Swimming Pool/Aquarium Products             | 106    |
| Tobacco Products                            | 187    |
| Miscellaneous/Unknown Substance (Non Drugs) | 81     |
| Total Non-Drugs                             | 19,611 |
| Total Agents                                | 37,311 |

### THERAPY

Supportive care is a critical component of the treatment of a severely poisoned patient. Additional therapeutic maneuvers include decontamination, enhancing elimination and antidotal therapy. The most common home treatment modalities include ipecac syrup for oral exposures and flushing or irrigating the skin or eyes for dermal and ocular exposures. A summary of some specific therapies follows:

| Decontamination            | Number |
|----------------------------|--------|
| Ipecac                     | 1,990  |
| Activated charcoal         | 3,780  |
| Cathartic                  | 3,598  |
| Lavage                     | 882    |
| Dilute                     | 3,943  |
| Irrigate/wash              | 4,547  |
| Fresh Air                  | 390    |
| Other                      | 344    |
| Total Decontamination      | 19,474 |
| Antidotal Therapy          | 693    |
| Enhancement of Elimination |        |
| Hemodialysis               | 23     |
| Hemoperfusion              | 6      |

### DEATHS

The Maryland Poison Center was consulted on 30 patients who died during 1991. In eight of these cases it was determined that the poisoning was not responsible for the death. The remaining 22 cases are listed below.

| Age | Sex | Agent(s)     |
|-----|-----|--------------|
| 1   | M   | theophylline |
| 2   | F   | insulin      |
| 18  | F   | gasoline     |

| Age  | Sex | Agent(s)  |
|------|-----|---|
| 30   | F   | opiates, amphetamines, barbiturates                     |
| 31   | F   | lithium, haloperidol, fluoxetine, benzotropine          |
| 31   | F   | desipramine, alcohol                                    |
| 32   | F   | nortriptyline   |
| 32   | M   | ethylene glycol   |
| 34   | F   | morphine, codeine, acetaminophen                        |
| 38   | F   | carbamazepine, quazepam, opiate                         |
| 40   | F   | acetaminophen, alcohol                                  |
| 47   | F   | codeine, oxycodone, acetaminophen                       |
| 54   | M   | isopropyl alcohol                                       |
| 58   | F   | theophylline  |
| 59   | F   | theophylline  |
| 60's | M   | ethylene glycol   |
| 61   | F   | mildew remover (sodium hypochlorite/sodium hydroxide)   |
| 67   | F   | propoxyphene, nortriptyline, lithium                    |
| 79   | M   | digoxin, theophylline                                   |
| 81   | M   | chlordiazepoxide; acetaminophen/codeine                 |
| 82   | F   | alprazolam, oxycodone/acetaminophen, naproxen, oxazepam |
| 90   | F   | aspirin   |

### EDUCATIONAL PROGRAMS

In addition to its emergency telephone service, the MPC provides professional and public education programs throughout the state.

### PROFESSIONAL EDUCATION

The MPC offers a statewide program of hospital inservices as well as presentations at grand rounds and local conferences. Poison center staff conducted a total of 32 presentations in 1991. Some of these programs are given in conjunction with the MIEMSS education program. A Toxicology Grand Rounds program in conjunction with the Departments of Emergency Medicine at Johns Hopkins Hospital and University of Maryland Medical System met the first Wednesday of each month from January to May.

### PUBLIC EDUCATION

The MPC provides public education by a variety of mechanisms including presentations, displays, distribution of brochures, loan of audiovisual materials and interaction with the media. In 1991, a total of 41 poison prevention presentations and displays were conducted. Limited amounts of educational materials are available free. Larger quantities can be obtained at a minimal charge.

The Maryland Poison Center staff are available to provide inservices on a variety of poisoning related topics to physicians, nurses, and other health care professionals at no charge. If you are interested and would like more information on these inservices, please contact Lisa Booze at (410) 328-7604.

## RESEARCH

Research in clinical toxicology and poison epidemiology is an important component of the MPC program.

*The following presentations were made at professional meetings during 1991:*

Gorman S, Klein-Schwartz W, Oderda G. Pediatric Acetaminophen Ingestions - When is Health Care Referral Necessary? AACT/AAPCC/ABMT/CAPCC Annual Scientific Meeting, Toronto, October 1, 1991.

Klein-Schwartz W, Litovitz T, Oderda G, Bailey K, Kuba A. Fluid Administration with Ipecac: Milk vs. Clear Fluids. AACT/AAPCC/

ABMT/CAPCC Annual Scientific Meeting, Toronto, October 2, 1991.

*The following articles were published or in press in 1991:*

Klein-Schwartz W, Oderda GM. Poisoning in the Elderly. Epidemiological, Clinical and Management Considerations. *Drugs and Aging*, 1991; 1:67-89.

Klein-Schwartz W. Denatonium Benzoate: Review of Efficacy and Safety. *Veterinary and Human Toxicology*, 1991; 33:545-547.

Rose SR, Gorman RL, Oderda GM, Klein-Schwartz W, Watson W. Simulated Acetaminophen Overdose: Pharmacokinetics and Effec-

tiveness of Activated Charcoal. *Annals of Emergency Medicine*, 1991; 20:1064-1068.

Klein-Schwartz W, Litovitz TL, Oderda GM, Bailey KM, Kuba A. The Effect of Milk on Ipecac-induced Emesis. *Journal of Toxicology - Clinical Toxicology*, 1991; 29:505-511.

Litovitz TL, Bailey KM, Schmitz BF, Holm KC, Klein-Schwartz W. 1990 Annual report of the American Association of Poison Control Centers National Data Collection System. *American Journal of Emergency Medicine*, 9:461-509, 1991.

Klein-Schwartz W. Epidemiology of Poisoning. *Clinical Chemistry News*, In Press.

Gorman RL, Khin-Maung-Gyi T, Klein-Schwartz W, Oderda GM, Benson B, Litovitz T, McCormick M, McElwee N, Spiller H, Krenzelok E. Initial Symptoms as Predictors of Esophageal Injury in Alkaline Corrosive Ingestions. Accepted by *American Journal of Emergency Medicine*.

Chamberlain JM, Gorman RL, Oderda GM, Klein-Schwartz W, Klein BL. The Use of Activated Charcoal in a Simulated Acetaminophen Overdose: A New Loading Dose for N-Acetylcysteine? Accepted by *Annals of Emergency Medicine*.

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