Contemporary Themes

Household products and poisoning

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The belief is widely held that many people are seriously poisoned, or injured, every year by household products. To ascertain the size of this problem we undertook two complementary investigations.

Design of the studies

The first study was based on inquiries to the London centre of the National Poisons Information Service between January 1974 and June 1975 about household cleaning and washing products (excluding polishes, spot cleaners, and cleaners for soft fabrics). During that period there were 28 928 inquiries: 8556 were concerned with household products in general and 1457 of these with cleaning and washing products. The records of the inquiries and data from follow-up questionnaires provided information about age of patient, manner of exposure, and symptoms in over 1200 of these cases.

The second study, by contrast, collected information on all ingestion and eye accidents in the home. The population sample extended over 2018 housewives, recruited from a three-stage stratified random sample of households in Britain. A primary questionnaire was sent to each one to elicit whether, within the past year, (a) any children in the family under the age of 11 years had accidentally swallowed anything or (b) anyone in the family, regardless of age, had got anything in the eye. This initial appeal elicited 1745 replies: there were 138 instances of one or more accidental swallowings during the year by children within the specified age group. Another questionnaire was sent to all these 138 households with the object of identifying the product, the sex and age of the child, the circumstances of ingestion, and ensuing action (any symptoms, treatment, and outcome). In all there were 170 replies on ingestion incidents in these 138 households. Among the same 1745 first-stage replies there were 890 households in which there were one or more eye contacts during the year. Another questionnaire was therefore sent to each of these to gain further particulars, and these covered 1531 eye incidents in the 890 households.

Detailed tabulation of the results of both studies may be obtained on request.*

*Requests should be made to the Director, National Poisons Information Service, Guy's Hospital, London SE1.

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Results

STUDY 1

Of the 1457 cases coming to the notice of the National Poisons Information Service and implicating household cleaners and washing products, 96% were by ingestion, 3% by inhalation, and 1% by skin or eye contact. Of the 45 incidents by inhalation, no fewer than 40 arose from liquid bleaches and lavatory cleaners, alone or in combination.

Most (84%) of the inquiries originated from hospitals (accident and emergency departments), and there is no indication of any ward admission thereafter. The male:female sex ratio was 56:44 and, as expected, the predominant age group was 1-5 years. Altogether 55% of the patients had no symptoms, but among the recorded symptoms gastrointestinal reactions were commonest—nausea, vomiting, diarrhoea, and abdominal pain. The remaining symptoms were a miscellany of swollen eyes/lips, sore throat/mouth/tongue, dizziness, irritability, coughing, crying, breathlessness, thirst, pallor, headache, and tightness of the chest with, rarely, bronchospasm, depression, and cyanosis. Apparently only 32 cases (2%) were treated, 10 with only a diluent or demulcent. On eight occasions emesis was induced or gastric aspiration and lavage were performed; in five of these cases liquid bleach had been taken by people who were all over 5 years of age.

There were four deaths in this series. All were adults, of whom three took liquid bleach and one a lavatory cleaner, all in very large doses and unlikely to have occurred accidentally.

STUDY 2

The household survey disclosed that in 79% of the cases of ingestion of all kinds there was no effect on the child at all and in only 8% was there resort to medical help. Hospital admission followed in 2% of these (all medicines) without any serious consequences and no fatalities. The sexes were evenly divided, 9% of the children were under 1 year of age, and 83% were under 5.

Although the eye incidents were caused by all types of products the signs or symptoms, or both, had resolved within a few minutes in 74% of the cases, and in 17% recovery took up to a few hours. In 9% the reactions persisted for one to seven days, but there was no indication at all of any permanent damage. Reference was made to a doctor or hospital in 4% of cases, and in 3% treatment was given. There were apparently no inpatient admissions.

As only to be expected the age distribution of the eye contacts was quite different from that with ingestion, only 6% being under 5 and another 12% under 15 years of age. With the 82% of adults the principal age group affected was the 21-30-year-olds and the female: male sex ratio was 80:20.

Discussion

We do not claim that the 1457 inquiries of this type coming to the attention of the National Poisons Information Service are comprehensive or exhaustive, but at least it would be reasonable to deduce that other incidents would be minor rather than serious. This view tends to be corroborated by the household survey, which shows a very high frequency of young children

swallowing household cleaning and other products. Taking this sample as representative, the percentage incidence applied to the 5 760 000 households in Britain including at least one child under 11 would give a total of some 1 260 000 such occurrences a year. Yet the consequences are seldom severe. The amount swallowed, as noted in both studies, was nearly always "small" or "very small." It was unusual for medical help to be sought, and signs and symptoms featured only in the minority. Active treatment was seldom needed, and hospital admission was exceptional.

More obvious adverse effects were associated with lavatory cleaners and bleaches, but they were never serious except in the cases of the four adults, where there is good reason to believe that the swallowing of large amounts was deliberate. Adults ingested lavatory cleaners and bleaches twice as often as all other cleaners, whereas children under 5 years ingested lavatory cleaners and bleaches only half as often as the other cleaners.

The effects recorded in practice are in accord with the acute oral toxicity studies carried out on animals for most household products, even though the figures are not often published.

The household survey showed that eye accidents in the home are extremely common and, once more extrapolating from this sample, it may be calculated that for the 19 million British households in all 10 million would experience no fewer than 17 million eye accidents a year.

Understandably the principal products were shampoos, hair lacquers, and eye make-ups, so it is not surprising that the female:male sex ratio was 4:1. Soap in the eye was reported in only 1%, yet this should surely be a common event and one that is seldom entirely without symptoms. Presumably this is accepted as a simple misfortune of modern living. The quantities concerned were almost always "small" or "very little," while the mishap was usually an accompaniment of "washing hair,"

"spraying hair," or "using eye make-up." The people affected customarily relied on their own simple palliatives; it was exceptional for a doctor or hospital to be contacted and eye damage was never serious.

CONCLUSIONS

From the results of these studies, along with those of other published findings, we conclude that:

(1) The intrinsic toxicity of most of the household cleaning products on sale in Britain is not high and, while some of these materials can prove poisonous and, indeed, lethal if wilfully swallowed in excessive quantities, the accidental ingestion of the amounts commonly taken by children hardly ever endangers health and, less still, their lives.

(2) While parents should always be counselled to keep household products as far as possible out of reach of small children, the hazards to the young should not be exaggerated, for this will provoke unnecessary anxiety.

(3) At the same time parents and others with small children in their care should not be deterred from seeking medical help in an emergency but, where household products are concerned, general practitioners and the staff of accident and emergency departments should not embark precipitately on active treatment or admission to the ward, which may be as unnecessary as it is distressing.

(4) Getting household products in the eye is virtually commonplace in Britain, especially in the 20-30-year-old age group. The consequences are mild and seldom demand more than palliative relief.

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I saw an elderly patient who developed a combined distribution of lesions that included classical shingles distribution at the level of T3 plus the generalised maculopapular rash of chickenpox. Is this unusual?

During aging apparently healthy older persons have a lower proportion of circulating T cells. Because of this, when infected by such viruses as varicella/zoster, in which an intact T-cell function is important for recovery, they may develop extensive lesions that take longer to heal than those in younger patients. Those who, because of disease or its treatment, have in addition to defective T-cell function some suppression of B-cell function may also have impaired humoral antibody responses. In such cases shingles may be associated with some viraemia, and this may result in shingles and later the development of a typical chickenpox eruption. In old people neutralising antibody to varicella/zoster virus may decline to very low or undetectable levels. Such people, should they get shingles, may also experience viraemia and occasionally develop a varicella-like eruption.

Are plastic hoses unsuitable for replenishing drinking-water tanks in boats?

Several makes of tubing are satisfactory for replenishing drinking-water tanks. The British Standards Institution has a specification for black polyethylene pipe (type 32) suitable for use in cold water services (British Standard No 1972 dated 1967). The National Water Council publishes lists of water fittings that have been examined, tested, and accepted by the NWC Approvals Board as not contravening the requirements of the model water bylaws made under the Water Acts for preventing waste, undue consumption, misuse, or contamination of water supplied by the water boards. The use of the fittings in any particular supply area is at the discretion of the local water authority, which should be contacted by owners of marinas and boats.

Some other precautions should also be taken by boat owners to preserve the hygienic quality of the water in their drinking-water tanks. When the tank has been filled the hose should be disconnected from the supply tap, drained, and stored in a dry, clean place. When

next connecting it to the supply tap, flush water through the pipe to waste for a minute or two to ensure the removal of any dust, dirt, insects, etc that may have accumulated. It is important to keep the tank on board clean. At the beginning of each season it should be cleaned out thoroughly and then inspected monthly for evidence of contamination or deterioration; at the end of the season it should be drained out. Furthermore, the tank should be provided with a closely fitting, overlapping, dust-tight, and light-tight lid or rigid cover to prevent entry of dust, dirt, insects, litter, etc.

Is cancer of the cervix more likely to occur in women who have had sexual intercourse in their early teens? Does the incidence correlate with the age of the child and the number of times intercourse takes place?

Clarke¹ reviews this subject briefly. The facts are difficult to establish but it does seem that early age at first coitus and multiple sexual partners are factors associated with the development of cervical carcinoma. Intercourse with uncircumcised men may increase the risk of cancer. The theory is developing that herpes virus infection may be a cause.² If true, then anything that helps in its transmission from person to person might be expected to increase the number of cases of cancer.

¹ Clarke, M, in *Gynaecological Malignancy*, ed M G Brush and R W Taylor, p 4. London, Baillière Tindall, 1975.

² Poste, G, and Waterson, A P, in *Gynaecological Malignancy*, ed M G Brush and R W Taylor, p 87. London, Baillière Tindall, 1975.

A 50-year-old patient who had a fenestration operation for otosclerosis 20 years ago wishes to go on a two-hour flight in a modern pressurised aircraft. He is comparatively deaf and wears a hearing aid but otherwise is in good health. What do you advise?

Provided at the time of flight there is no evidence of middle ear infection I foresee no problems.