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CHILDHOOD ACCIDENTS ASSOCIATED WITH CONSUMER PRODUCTS

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TABLE OF CONTENTS

LIST OF TABLES

CHILDHOOD ACCIDENTS ASSOCIATED WITH CONSUMER PRODUCTS

CHAPTER I

INTRODUCTION

General

Since preliterate time man has been known to alter his environment in order to live in one of his own making often without anticipating the results. Gordon, (1) professor and physician has emphasized the complexity of public health today due to man's alteration of his environment and has stated that: "...the departures from health are mainly man-made. They result from the things man does to himself and what he does to his environment." Man's great advances in intellectual abilities has allowed him to create an environment with many inherent hazards and unless some of these hazards can be eliminated, man will undoubtedly destroy himself.

Wolman (2) has pointed out that deaths and injuries from accidents "...are perhaps excellent examples of the real challenges to public health of the future, because inherent in them, are the intertwined practices and mores of the entire way of life of the present century." Accidental deaths and injuries have plagued this country for many years and have become one of the most serious public health problems.

Advancement in medical care and rapid increases in medical knowledge have contributed to the effective control of once epidemic infectious diseases that only 50 years ago were major causes of death. Despite great advances in technology, and the fact that accidental injury preventive programs have been in existence for more than 100 years, morbidity and mortality due to accidents have continued to increase. It is true that for more than half of their lives the people of this country are more likely to die from accidents than from any other cause (3). Throughout life as a whole, accidents are at present outranked as a cause of death only by the cardiovascular diseases and by cancer (4). Accidental injuries have become the leading cause of death in young people mainly because the incidence of other diseases have decreased.

Accidents being one of the major public health problems is ostensible when one considers the leading causes of death among age groups. Accidents have been the leading cause of death up to the age of 44. When accidental injuries are considered, the magnitude of the problem becomes greatly increased.

To appreciate the magnitude of the public health problem of accidental injuries, one must consider not only deaths due to accidents but also impairments, disabilities, hospitalization, loss of days from work or school as well as psychological damage to individuals and family members involved. Accidental injuries and deaths respect no person; the rich and poor, the weak and strong will be subjected to accidents as long as man is falliable and the human environment

continues to provide accident hazards. But there still remains hope when one considers the unlearned becoming learned.

In the past, research in the field of accident prevention has not been evaluated critically and systematically. Much of the effort has been devoted to the collection of data about accidents but relatively little to a sophisticated analysis of causal factors. Accident prevention should involve the action of many disciplines; however, many skilled researchers whose potential contributions may be valuable, have rarely been confronted with an opportunity to become involved. The behavioral aspects of accidents such as the family life style, the social factors at work in a community, the values of the society as a whole, have received less attention than the purely technological aspects. It has been noted that some people have been able to live in a relatively unsafe environment with considerable impunity, whereas others being somehow different in their makeup, have found even relatively safe environments dangerous (5). This statement being true emphasizes the more complex problem of human factors involved in accident causation.

Accident Definitions

A contributing factor to the lack of progress in accident control has been the attitude with which accidents are viewed by the people making up society. The general public, as well as some educators have regarded accidents as being caused by non-scientific concepts such as "chance." At this stage of their development, people in general have assumed that accidents are going to happen and their control is

outside the realm of human influences.

The dictionary defines "accident" as an event occurring by "chance"; however, professionals in the field of accident research tend to define the term in several different ways. "Accident" is not a scientific construct but rather a common sense word generally used to describe some unforeseen chance event that produces bodily injury or property damage (6). The major emphasis of most common sense usage of the term "accident" seems to be upon the unexpectedness and undesirability of the phenomenon. An accident usually occurs swiftly with some sudden and unanticipated turn of events which takes the unfortunate and innocent victim by surprise. It is over quickly and there is the general feeling that little could have been done except clean up the damage. It has been proposed by Suchman and Scherzer (7) that the degree of predictability, controlability, and injury are the three criteria to be applied to the definition of an accident.

Consumer Product Hazards

Even though accident prevention programs have been in existence for a long period of time, in recent years more concentrated efforts have gone into consumer safety studies. The National Commission on Product Safety (NCPS) was authorized by Public Law 90-146, and was appointed by President Johnson on March 27, 1968. This commission was created to investigate the extend to which unsafe consumer products were related to the incidence of home accidents. The term "consumer product" was meant to include all retail products used by consumers in or around the household with the exception of food, drugs, cosmetics,

motor vehicles, insecticides, firearms, cigarettes, radiolgocal hazards, and certain flammable fabrics (8).

The Commission's Final Report was presented to President Johnson and Congress in June, 1970. This report indicated that household accidents have been responsible for 30,000 deaths, 110,000 persons permanently disabled, another 585,000 persons hospitalized, and more than 20,000,000 people injured seriously enough to require medical treatment or to be disabled for at least 1 day, annually (8). This incidence of household accidents yielded a rate of three deaths per hour during each day. For every person reported killed 1,000 more suffered injuries, and of those injured, 40 required hospital care. The total number of persons injured in home accidents (20,000,000) was more than four times as many as were injured in traffic accidents. These accidents were estimated to have cost the country over $15,000,000 per year (10).

In home accidents, the most vulnerable age group has been 5 years or younger. About 7,000 children under the age of 5 die each year in home accidents. Watson (9) stated that "Accidents are responsible for the deaths of more infants and children of both sexes between the ages of 1 and 14 years than are the next four most fatal diseases of childhood combined; pneumonia, cancer, congenital malformation, and heart disease." As many as 15,000 children under 15, including 5,000 pre-school children, have died as a result of accidents in the United States each year and 15,000,000 more children have sought medical treatment because of accidents (10). Children up to 12 months

old have at least one narrow escape from a serious accident in the home per week according to the Environmental and Public Health News Letter (11).

Bicycles and playground equipment contributed to more than 2,000,000 children being injured with bicycles alone having caused over 120,000 fractures and 60,000 contusions annually (8). Another 500,000 to 1,000,000 children suffered accidental damages from household chemicals during a 1-year period. Common falls accounted for approximately 50 per cent of all accidental injuries in children under 5 years of age (12). When one reflects one these statistics of childhood accidents in a society where the child is supposed to be revered, this neglect and indifference to the problem whose incidence and consequences could be reduced is inexplicable. It is most unfortunate that a country that put men on the moon within one short decade of concentrated effort should find it difficult to reduce the number of injuries and deaths due to accidents.

It has been noted by many who work with children that a certain number of injuries may be necessary for learning and adaption in every day life. Each child needs to appreciate in small doses what is sharp, hot, and dangerous in order to avoid more serious problems at a later date. These things must be taught to children in society so that danger from some accidents can be avoided. At this time, society tends to respond when individuals can be seen in injury or death producing situations; for example, a mine disaster where the victims are specific and can be seen as individuals and as "real people." On the other hand

accident victims are anonymous; "statistics don't bleed." It has been felt that only the professional gambler and the scientists are directly aware of the significance of probability (9). Hence, the dramatization of individual disasters has often been effective in producing public action and in reducing foreseeable chances of future misfortunes; whereas efforts to save many more lives needlessly lost, as well as reducing the cost to society of maimed and damaged individuals usually has been met with indifferences by the general public. Accident prevention should be a way of life; however, until more research has been done to give a fuller understanding of the nature and causes of accidents they will continue to be the major public health problem.

CHAPTER II

LITERATURE REVIEW

The incidence of accidental injuries and deaths can be reduced only through application of technology and behavioral or human aspects of accident prevention. Until there is a much better understanding of these human factors, until a great deal more research has been stimulated to identify and analyze them and validate the true role they play in accident causation, efforts at accident prevention will continue to be largely empirical in nature (5).

The Epidemiological Approach

The "Epidemiological approach" would consider an epidemiological analysis of a particular situation, an establishment of causes, the development of specific preventive measures directed toward those causes and a periodic evaluation of accomplishment from the program instituted (13). In employing this approach to accident causation and prevention, a number of agencies and a variety of disciplines must be involved. State and County health departments have an obligation in all accident prevention programs. Since, childhood injuries are a public health problem, it has been felt by many that these agencies should approach the problem through techniques that have proven to be useful for other mass disease problems. It has been determined that

the epidemiological approach to disease control and prevention has caused a marked decrease in certain diseases.

It has been felt by some educators in the field that accidents and disease should be viewed in the same light. If an accident results in unexpected physical or chemical damage, and a disease results in unexpected biological damage, then the only real difference between the two has been considered to be categoric in nature (14). Both accidents and diseases result in unexpected damage and with this being true, it has been demonstrated that accidents could be studied using the epidemiological approach.

Tuberculosis has been a disease which has affected many but over the years the death toll from this desease has become much lower. At one point in history, tuberculosis and home accidents followed almost the same pattern in the number of people who were being affected, however home accident tolls have remained unchanged, particularly among the younger sector of the population (15).

Irrespective of whether disease and accidental injury be looked upon as affecting the individual or as the mass effects on a community, causation is to be interpreted as something more than the agent directly involved, e.g., a germ caused infectious disease or the loose board in home accidents. Rather, it should be a combination of forces from at least three sources. These consist of the host, the agent itself, and the environment in which the host and agent find themselves. This epidemiological approach to disease control has been felt by many to be applicable in effective accident prevention and control.

The Sociological Approach

This method deals with human behavior and follows Sutherland's theory of delinquency which states that behavior whether delinquent or non-delinquent, must be learned from others and virtually cannot be practiced in isolation (16, 17). According to Klein (16), Sutherland concluded that delinquency is most likely to occur when the child's environment offers him many opportunities to associate with peers who are already delinquent, to observe many types of delinquent behavior, and to assimilate delinquent rather than conventional norms.

This method has indicated that high hazard environments were more likely to generate accidents than one that contained fewer hazards. However, it must be remembered that the number of accidents an environment generates may depend less on the number of hazards contained than on the behavior and social values of those who live in that environment. It has been felt that parental and peer attitudes toward fate, luck, danger, violence and control over the environment can affect the child's likelihood of an accident. It has been shown that certain ethnic groups who inhabit high delinquency areas show low rates of delinquency probably because the group norms immunize the child against the peer groups and the environment (17). Many feel that childhood accidents could be reduced by studying more closely the social and subcultural factors that could insulate the child against accidents, even in environments that abound in hazards (18, 19, 20). Factors involved in accident situations include tension, hunger, fatigue, age, hecticness, stability,

poverty, family attitudes and relevance.

As cited by Wright (20), Tillmann demonstrated that drivers with a record of repeated automobile accidents did not confine their "accident" behavior to the highway. They were in trouble in various aspects of their lives to a substantially greater extend than accident free drivers. Tillmann's conclusion was "you drive as you live." Therefore, the social environment must be considered in accident causation and prevention both in traffic and childhood accidents.

The Ecological Approach

The "ecological approach" to accident causation has considered the person, the event, and the situation (9). The characteristics of the total environment including both physical and social, have determined in large measure the types of accidents most prevalent in a given community. An example of different community rates have been seen in the rate of poisoning accidents in pre-school children. In 12 southern states the rate of poisoning was 4 per 100,000 population as compared to two for the rest of the country (9). This suggests that a cross community comparison of childhood accidents, for these would throw light on the differences in social and environmental factors.

The ecological approach has been highly effective in decreasing the illness and death resulting from certain diseases (21). The success of antibacterial drugs in the control of infectious diseases has often been given the whole credit for the present high standards of health. But the mortality of many infectious diseases had already begun to recede in Europe and North America long before the introduction of

specific methods of therapy, even before the demonstration of the "germ" theory of diseases (9). Therefore, it was felt that the toll of accidental injuries and deaths could be reduced by use of the ecological approach even before any specifics of control for particular accidents have been evolved.

This ecological approach would allow the concepts of the family to be considered. The literature of children's accidents has tended to report the family background as if it were fixed. It has been determined that the health of a child is bound up with the family's internal and external environment, even before it is born and this common environment, with common modes of thought and behavior may affect susceptibility to accidents (22). The ecological approach would tend to cover the environment both physically and socially in accident investigation and causation, and would therefore probably be one of the better approaches to accident prevention and control.

The Interdisciplinary Approach

The problem of accidents has interested researchers in many disciplines. Studies have been done on controlling purely the environment and on controlling human behavior in accident producing situations (5). Accidents are the results of the complex interaction between the individual and his environment and any program to control them must consider these interactions. The conceptual frame work for accident events has been borrowed in the past from the field theory of pyschologist Kurt Lewin. Two of his students stated:

One of the foundations of field theory is the emphasis on the

> constructive method of research. Starting with the conception that an event is always the result of the interaction of several coexisting factors, field theory attempts to study by considering first the event as a whole and then gradually sorting out the operative factors by a series of increasingly precise approximations which constantly maintain intact the overall relationship. . . . This is in contrast to the method of research which begins by isolating parts of an event for independent study in the expectation that it will eventually be possible to reconstruct the whole by adding together the parts. In other words, one has to study the whole problem or situation even if the first attempt is not as complete and accurate as one might desire. Then continuous experimentation and logical manipulation of the parts of the whole differentiated and finally these parts are placed in correct relationship with each other. The important thing to note is that one does not start from the parts and work to the whole, but one starts with the whole (23, 24).

With the field theory approach to accident causation one is forced to begin by including everything and excluding nothing, and then proceed step by step to isolate all relevant factors.

At the present time many workers in the field of accident prevention feel the "field theory" approach to be highly abstract and devoid of practical consequences. However, when the total accident producing situation is considered, the field theory approach could be quite applicable in determining the causes of accidents. For example consider a car accident with many factors that produced the accident beginning outside the car. Some of these factors could be stresses from the family, social problems, environmental factors such as weather conditions, or even the added pressure of rushing.

Another example would be industrial accidents which usually have their genesis outside the plant. These accidents have caused more time lost from work than did the in-plant accidents (25). This

being true, accident prevention should deal not with accidents but with men among whom the accidents have occurred. Not men who work an 8-hour or 10-hour day, but men who live around the clock who interact with fellow workers, with their families and their neighbors. As the ancients had it, the aim is to see life clearly and see it whole. It is true that this is an age of analysis and super specialitization and the analytic and specialistic approaches have been extraordinarily fruitful (25); however, all factors should be considered in accident causation and prevention.

Environmental Factors

The environmental aspect of accident prevention has been concerned with reducing the opportunity for accidents, taking into account the engineering design of products which cause them. Examples include safety wheels on bicycles and tricycles, safety packaging of harmful household substances, guards on machines and around open heating units, locks on doors, fire prevention measures in heating and electrical installations in homes and schools, etc. There is an almost infinite number of accident opportunities which can be studied and for which accident preventive measures and devices can be developed (26).

This in itself has been a problem because of manpower efforts, monies, and the high degree of selectivity in determining feasible and desirable measures for accident preventive programs. Some major hazards must be controlled for safety purposes alone once the causative agent has been identified, the mechanism of its action determined and functional specifications for the environmental control measure

developed (5). Examples include legislative action, safety programs instituted, manufacturer's efforts to make safer products and public information on the awareness of accident problems associated with certain products. All of these efforts have caused a decrease in certain types of product hazard situations.

The season of the year in which accidents occur have been related to the type of accident. In general children of school age have more accidental injuries and deaths in summer than any other season. During the summer children have been exposed to more hazards and activities and less supervision. Older people have been noted to have higher accident injury and death rates in the winter because of a marked increase in falls.

Human Factors

Human factors have been concerned with the study of man, his physical characteristics, his sensory and motor capabilities, his experience and ability to learn, his behavior, and his tolerance to stress without injury (5). It has involved research investigation to reveal the mechanisms of interaction between a hazard and man for the purpose of obtaining a sufficient understanding of these mechanisms to develop appropriate remedial measures (27). These human factors cover the whole spectrum of man's responses in accident producing situations.

Stresses

Direct stresses have been divided into three major classes: physical, chemical and biological. Examples of injuries which have

resulted from physical stress are anoxia and asphyxia which occurred in abandoned refrigerators and improper use of plastic bags (28). Physical stresses also involved injuries resulting in fractures, concussions, contusions, lacerations from falls, burns from radiation and other cell and tissue damages. Chemical stresses include injuries that have occurred from chemical burns and poisoning from household industrial and agricultural poisons with immediate or delayed damage to the body (28). These injuries have had a high prevalence rate in the 1-year to 5-year old age group. Biological stresses result in injury directly, increase the likelihood of involvement in an accident-injury situation and render individuals more susceptible to injury when exposed to other stresses.

The stress capacity of individuals has played an important role in human factors involved in accident producing situations. Factors such as thirst, nutritional, psychological, sociological, aging and diseases have also been helpful in identifying target groups accounting for the success of some accident prevention programs. Stress tolerance have been shown to be helpful in potentially hazardous situations. King (28) stated that, "the likelihood of injury will increase when the lowest level of human tolerance has been exceeded and the frequency and severity will be related to the degree at which the stresses exceed any one of the higher levels of tolerance."

Host Factors In Accidents

Certain characteristics of people, and the hazards to which they expose themselves by the ways in which they live has played a

major role in accidental deaths and injuries. There have been various types of accidents which occurred to children of different ages. For example, injuries resulting from accidental ingestion of poisonous substances has largely been a problem in younger children from a few months to 4 years of age whereas the death and injury rate for bicycles was considerably higher in the 10 to 15 year old group. Factors in the host did not in themselves determine the types and frequencies of accidents, but they have contributed to the probability of occurrence.

The age distribution for deaths differs with the type of accident but for accidents in general, infants under 1-year of age had the highest rate, lower in teenagers and young adults, and increasing steadily with age (21, 29, 30, 31). Children from a few months to 4-years of age have been more suceptible to household accidents because of the many potentially hazardous situations found in the American home today. The child cannot distinguish between what is dangerous and what is safe unless he has been taught, and learning takes place only when the proper stage of "readyness" had been reached (32). There have been produced and marketed in this country certain household products that have been difficult for even adults to distinguish between the safe and unsafe product (33).

It has been pointed out that accident types differ with age; sex also plays a major role in accident type and can be seen in Table 1 (29). The death rate from accidents has been higher in males than in females, by approximately 2 to 1. The ratio of male to female death rates for infants was almost 1 to 1, and it increased with age

TABLE 1

ACCIDENTAL DEATH RATES PER 1,000 POPULATION,
BY AGE, RACE, AND SEX: UNITED STATES 1959-1961

Age	Total			White			Nonwhite		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
All ages	51.7	72.3	31.8	50.1	69.7	31.1	64.2	92.5	37.4
Under 1	91.4	100.9	81.6	75.3	84.1	66.2	183.2	199.2	167.3
1	41.2	45.5	36.7	36.4	40.4	32.3	69.0	75.7	62.2
2	31.7	36.4	26.8	27.4	32.2	22.4	57.0	61.4	52.5
3	26.8	31.6	21.9	23.4	28.9	17.7	47.2	48.1	46.2
4	24.0	27.3	20.6	20.9	24.6	17.1	42.3	43.5	41.2
5 - 14	18.9	26.3	11.2	17.4	24.6	10.0	28.1	37.3	18.9
15 - 24	55.8	92.8	19.4	55.7	92.4	19.3	56.6	95.8	19.9
25 - 34	42.8	71.4	15.3	40.4	67.4	14.0	61.1	103.8	24.3
35 - 44	40.6	65.4	17.0	37.5	60.3	15.5	67.5	110.3	29.1
45 - 54	49.1	76.4	22.6	46.1	71.4	21.5	76.7	122.7	32.9
55 - 64	58.5	88.1	30.7	55.6	83.8	29.2	87.6	130.8	45.8
65 - 74	86.8	117.9	59.7	85.3	116.1	58.6	103.8	138.7	71.9
75 - 84	210.4	234.6	191.6	213.8	238.1	195.2	163.6	191.7	138.4
85 & over	625.3	588.9	648.6	650.7	612.8	674.5	321.5	335.9	310.4
Age-adjusted									
Total	49.4	73.3	26.4	47.3	70.2	25.1	65.5	98.6	34.9
Under 15	26.5	33.1	19.5	23.5	30.1	16.7	44.3	52.4	36.1
65 & over	39.8	166.4	116.8	140.6	167.0	118.0	127.7	160.1	98.3

to the middle twenties. In children of school age it was approximately 2 to 1, and in the age group 15 to 24, approximately 5 to 1.

The injury rate for males has been lower for preschool children and increasing for teenagers; however, the fatality rate has been highest for the very young and very old and lowest for the school age population. The male from several months to 4 years of age has been noted to be involved in more home accidents than the female of the same age group (29). Females of the older [64+] sector of the population have far more accidental injuries than do males of the same age group; however, males have more fatalities. The injury rates for male to female ratio was approximately 1 to 1 in preschool children and 2.5 to 1 in the 17 to 24 age group. There was a marked increase of injuries of the aged which could be attributed to the high injury rate of the age in American home accidents (Table 2) (29).

The structure of society, with many cultural elements has influenced the values and behavior of different groups and their reaction to certain situations, thus affecting their accident involvement (2). Social and cultural factors have been considered as part of the chain of events which produce accident situations. These in turn influence economical status. Researchers have determined that social and cultural factors influencing occurrence of accidental injuries can be changed to contribute to accident prevention in certain groups (5).

The rate of accidental occurrences have been affected by social and cultural factors including income, education, peer relationship, customs and mores, family values (including supervision), occupation,

TABLE 2

NUMBER OF PERSONS INJURED PER 1,000 POPULATION, BY AGE, SEX, REGION AND SEVERITY OF INJURY: UNITED STATES, JULY 1959 - June 1961

Characteristics	Total persons injured	Persons with: Medically attended injuries	Activity-restricting injuries	Bed-disabling injuries	Hospitalized injuries
All persons	255.2	213.7	150.1	58.0	11.2
Sex					
Male	301.2	260.9	169.3	64.8	14.5
Female	211.7	168.9	131.9	51.6	8.1
Age					
0-14	303.8	254.8	169.4	64.8	14.5
15-24	291.6	259.5	171.1	55.0	9.5
25-44	227.8	190.8	134.7	52.8	11.2
45-64	218.3	183.8	133.3	55.0	11.4
65 & over	189.5	131.1	132.5	54.3	14.2
Region					
Northeast	232.5	205.7	122.3	49.1	11.4
North Central	260.2	218.1	150.1	52.3	11.4
South	243.2	195.7	154.1	63.0	8.7
West	308.5	254.6	189.7	74.3	15.6
Usual activity status					
Preschool and school	306.6	259.1	173.1	66.7	11.2
Working	253.6	221.4	145.7	58.8	14.6
Keeping house	181.7	138.6	118.8	40.6	7.0
Retired	191.5	137.2	147.8	78.3	*
Other	255.9	206.6	151.4	50.5	*

*Data not available.

housing living arrangements, major life disruptions, attitudes and alcohol (29). It has been noted by some researchers that the lower the family's income and economic status, the higher the accidental death and injury rate (34); however, this has not been observed in all studies (Table 3) (29). Some factors that have affected the frequency of accidents of different income groups have been large populations of the aged, the ability of the family to seek medical care and education.

TABLE 3

NUMBER OF PERSONS INJURED PER 1,000 POPULATION BY ECONOMIC STATUS, RACE AND SEVERITY OF INJURY. UNITED STATES, JULY 1959 - 1961

	Total Persons Injured	Medically Attended Injuries	Activity Restricting Injuries	Bed Disabling Injuries	Hospitalized Injuries
Family Income					
Under $2,000	229.5	165.8	157.3	60.6	11.1
$2,000-3,999	253.3	213.3	160.7	61.2	8.5
$4,000-6,999	263.9	224.8	149.9	59.7	12.6
$7,000 & over	258.2	222.0	140.3	52.5	12.2
Unknown	256.7	223.6	142.1	54.9	*
Color					
White	260.9	219.5	151.0	56.6	10.3
Nonwhite	211.4	168.4	143.1	68.6	18.3

*Data not available.

Groups to which individuals belong have influenced personal attitude and beliefs. For example, interpersonal relations between parents and children have played an important role in determining whether a child ingests certain hazardous substances. Langford et al. (35) stated that "non-accident parents" were close to their children and supervised them carefully, and that these families have more fun together than "accident families." Schulzinger (36) suggested that teaching a child safe practices by example and providing him with continuing exposure to a peaceful, orderly home environment may be important aids to "immunizing" him against accidents. In other words parents should encourage the child toward safe practices and show him by example that they themselves engage in such practices.

It has been determined that people's attitudes, whether formed individually or by group have influenced the frequency of accidental injuries and types of accidents. Suchman (37) stated that "cultural and social factors were of prime importance in the etiology of accidents, in terms of both frequency and type." Medical and physical conditions have been noted to have some effect on frequency and type of accidents (38).

Types of Accidents

Hazardous Substances

Because young children are so curious, household chemicals pose a major hazard; every liquid or chewable substance is something for them to sample (8). Most poisonings in the United States have been from the ingestion of toxic substances in the home, stored in accessible places in the original container with the top closed (39).

In industralized societies, the most common substances reported in accidental poisonings has been drugs or medications. The second has been household chemicals; drugs have accounted for one third to over one half of the reported poisonings in Germany, France, Italy, England, Canada and the United States (39).

In a survey by Scherz et al. (39), the average home contained 30 containers of drugs or medications. Each year an estimated 400 containers of toxic or potentially toxic substance enter the home of families of four in the United States (40). Of these 400 containers one may find drugs, household products (including cosmetics), petroleum products (including paints), and pesticides. Poisonings from these containerized products have been implicated in at least 90 per cent of the reported poisonings to the National Clearing House for Poison Control Center for 1965 through 1968 (41). Table 4 illustrates these data (40).

TABLE 4

ACCIDENTAL INGESTIONS AMONG CHILDREN UNDER 5 YEARS OF AGE, REPORTED BY POISON CONTROL CENTERS IN THE U.S.A. 1965-1968

Type of Substance	Percentage of Total Ingestion Per Year			
	1968	1967	1966	1965
Medicines	53.6	52.8	53.6	54.4
Household Products (cleaning, polishing, cosmetics)	20.4	20.7	20.4	19.9
Petroleum Products (including turpentine, paint)	10.5	9.6	10.0	9.8
Pesticides	5.5	5.6	5.8	6.1
Other	10.0	11.3	10.2	9.8
TOTAL	100	100	100	100

The hazardous substances ingested in different countries have been reflected by the kinds of toxic substance in the home. In India, for example kerosene used for heating was the principal toxin, accounting for about 60 per cent of all poisonings to children (42). In New Zealand and Southern United States agricultural chemicals have represented the prominent cause of accidental of poisoning (41, 43).

According to Jenson (44), in recent years approximately 3,000 children ingested some household detergent or cleaners. This figure is believed to represent only one sixth to one eighth of the actual number of ingestions. Non-phosphate detergents have caused greater damage than phosphate detergents in tests with animals and poses a greater problem to the youth of today because of its increasing popularity in the American homes (45). Males from 1 to 4 years of age have been found to ingest more household products than females of the same age (46).

Dr. Edwards, former Commissioner of the Food and Drug Administration, estimated that the number of ingestions of potentially harmful household substances range from 500,000 to one million a year (8). According to Jacobziner (47), Aspirins have been known to cause more poisoning to children between the age of 2 and 3 than any other drug. The National Safety Council reported that 2,583 victims suffered from accidental poisoning by liquids and solids in 1968 (48). In Oklahoma alone it has been determined that about 40 people die each year as a result of accidental ingestion of harmful products (49). Dr. Edwards stated that, "over the years, two categories of household products

have caused a greater degree of hospitalization than others, these were caustics and corrosives and petroleum products" (8).

Table 5 shows non-medical household products that have been most frequently ingested by children under the age of 5 (50). In addition, inhalation of poisonous gas, fumes, and smoke has produced poisonings and deaths in children.

TABLE 5

COMMON NONMEDICAL HOUSEHOLD PRODUCTS MOST FREQUENTLY INGESTED BY CHILDREN UNDER 5 YEARS OF AGE - 1966*

Products	Percentage of Ingestion	Hospitalization Rate (per cent)
Cosmetics	5.9	4
Pesticides	5.8	16
Petroleum Products	5.0	24
Soaps and Cleaners	4.0	9
Bleaches	3.5	14*
Disinfectants and Deordorizers	2.2	27*
Polishes and Waxes	2.1	36*
Lye and Corrosives	1.5	49

*Estimated from earlier data of National Clearinghouse for Poison Control Center.

Nontoxic or nonedible products also produce accidental injury to children. The National Clearinghouse for Poison Control Center (50) reported 63,000 ingestions in 1965 in children under 5 years of age. In the same year a study of 11,763 families in 28 cities, involving 16,650 children under 5 years of age, revealed 2,630 total ingestions or 15.7 ingestions per 100 children. The number of children in the

United States under the age of 5 at the time of this study was estimated to be 19.9 million, giving an extrapolated incidence figure of 3 million ingestions. These data suggest that only one in every 50 ingestions have been reported and that the majority of ingestions have been innocuous (51). Ingestion has not been reported by parents if they were thought to be inconsequential or the product was believed to be innocuous. This lack of reporting has been discouraging because in order for a prevention program to be successful, the people affected must be identified.

The WHO Advisory Group (52) on prevention of accidents in childhood described accident as "an unpremeditated event resulting in a recognizable injury," and believed that any attempt of control childhold accidental injury should include accidental poisons.

Falls

Falls include injuries associated with relatively fixed objects opposed to readily movable objects such as bicycles, tricycles etc. Fixed objects include those from stairs, steps, ladders; from or out of buildings or other structures such as tables, roofs, windows, doors, balconies, bridges, fences, etc.; into pit pools, wells, tanks; from beds, cribs, chairs, trees, etc.; from stepping on ice, paper, oil, snow, etc.; and from stumbling and tripping over objects; also from collisions with or from pushing or shoving by other persons.

In 1967 there were about 345,000 impairments due to accidental injury in children under 15 years of age; of this number 25 per cent were due to falls (29). Among all ages, home falls killed about 12,000

people in 1968 (53), and 18,651 in 1969 (48), and injured some 6,900,000 more annually (54). Falls have been the leading cause of none fatal injuries to children and have involved some 90 per 1,000 population (29).

Infants suffer many falls because of lack of supervision; these falls can be serious because infants less than 1 year old have skulls which are particularly thin allowing for damage to the nervous system. Damage to the brain in early developmental stages have produced permanently handicapped infants. A study of 380 infants who had been brought to a German hospital for treatment indicated severe injuries had occurred in 36 or 9.5 per cent, of which about, half 17 had skull fractures. Thirteen experienced fractures of the upper and lower limbs and six, injury to the clavicle (55). Two of the 380 infants died after treatment; however, most of them suffered only slight injury. From this study it was found that infants even in the first 4 months of life were active enough for serious falls to occur, particularly if the child was left unattended.

In a study of hospital accidents in five hospitals, Lowery (56) stated that over half of the accidents which occurred on pediatric wards were due to the falls from cribs or beds to floors.

In New York City during the period January, 1965 through September, 1969 there were 201 deaths among children under 15 years of age due to fall from one level to another (30). This represented 12 per cent of all accidental deaths in this age group. In the 0-year to 4-year age group there were 132 such deaths, 16 per cent of the

accidental deaths. Table 6 gives deaths of children from falls from heights by year and age in New York City (30).

TABLE 6

DEATHS OF CHILDREN FROM FALLS FROM HEIGHTS, BY YEAR AND AGE; NEW YORK CITY 1965 - 1969.

Age	1965	1966	1967	1968	1969*	Total
Under 5 years	18	29	47	21	17	132
5 - 9 years	8	14	10	8	8	54
10 - 14 years	4	4	4	3	3	14
TOTAL	30	50	61	32	28	201

*Through September 30, 1969.

The age distribution of the fatal cases was clustered in the 0-to-5-year range with the peak between 2 and 3 years.

Table 7 gives deaths of children from falls from heights by sex and age in New York City (30). Throughout the age range to 14 years, there were a greater than 2:1 excess of males (138 cases) by the sex ratio and was less marked among younger cases. From the study done in New York City it was found that 85 per cent of the children under 5 fell from windows. However, place of occurrence of falls have been noted to vary depending on the physical environment (56, 30, 57). Table 8 gives an estimate of place of occurrence of all falls in the United States for 1970 (58). Home falls account for more than half of the falls suffered by the American population, most

of these falls were associated with home furnishings and stairs.

TABLE 7

DEATHS OF CHILDREN FROM FALLS FROM HEIGHTS, BY SEX AND AGE; NEW YORK CITY 1965 - 1969

Sex	0 - 4 Years		5 - 9 Years		10 - 14 Years		0 - 14 Years	
	Number	%	Number	%	Number	%	Number	%
Male	76	(57)	50	(90)	12	(86)	138	(69)
Female	56	(43)	5	(10)	2	(14)	63	(31)
TOTAL	132	(100)	55	(100)	14	(100)	201	(100)

Burns

The rapid growth in technology has produced many fire hazards which has caused burns to reach an epidemic stage. Preventive programs for burn control have grown not only because of the high direct cost to this society but also because of the type of injuries resulting from burns. It has been determined that of 100,000 burn victims, 50,000 will have scarring effects for the rest of their lives (59).

The National Safety Council reported 1,086 deaths from accidental burns to children from age 0 to 5 in 1968 and 686 deaths to youths from 5 to 14 during the same period (59). These data do not include the injuries to youth from accidental burns the magnitude of which is in the thousands. Medically treated burns to all ages total

TABLE 8

ANNUAL ESTIMATES OF DEATHS FROM FALL BY PLACE OF OCCURRENCE
UNITED STATES, 1970.

Place of Occurrence	From one level to another	On same level	Total
All Falls	10,200	9,800	20,000
Home	6,500	5,900	12,400
Stairs	3,800	-	3,800
Ladders	400	-	400
Furniture	1,200	1,800	3,000
Bed	800	800	1,600
Chair	350	900	1,250
Other	50	100	150
Window	350	-	350
Roof	100	-	100
Fence or tree	50	-	50
Hole in ground, ditch, excavation, embankment	50	-	50
Bathtub or shower	-	50	50
Door	-	50	50
Rug	-	350	350
Floor	-	150	150
Ice or snow	-	100	100
Dry sidewalk or ground	-	50	50
Other agents	550	350	900
No agents*	-	3,000	3,000
Other locations	3,700	3,900	7,600
Resident in an institution	1,400	2,750	4,150
Street and highway	200	1,000	1,200
General outdoor locations	550	100	650
All other locations	1,550	50	1,600

30,000 to 60,000 annually (8). Three out of four burns injure children under the age of 6 according to surveillance reported from hospitals in the District of Columbia and Memphis.

In recent years floor furnaces, hot substances, space heaters, electrical appliances, fireworks, and flammable fabrics have posed the greatest problem to the young resulting in burns. For many years gas fired floor furnaces have been searing flesh of infants and imprinting waffle pattern scars. These furnace grills have been responsible for one in every five burns to children under 15, and has been the leading cause of burns to children under 5 (8). These furnaces injure about the same number of persons per 100 units in use each year as do automobiles.

There were about two million gas fired floor furnaces in use in the United States in 1969 (8). These furnaces were commonly found in the South Atlantic and Southern Central States, California, Arizona, and New Mexico. The use of these furnaces for heating in the American home has declined over the past 10 years; however, their use in mobile homes and other low priced housing has increased during the same period.

Professor Waller (8) reported that, "The temperature at the level of the floor grate has been recorded at between 300° and 350°F, the usual temperature for cooking chicken, beef, ham, veal and other meats." It has been shown that temperatures of 155°F can cause second degree burns if skin contact is made for 1 second (8). This indicates that skin contact to surfaces of 300°F can cause permanent disfiguration from third degree burns. These data paint a sad picture when one

considers the fact that most of the burns from floor furnace grills could be prevented if the grills remained at temperatures below 120° to 130°F. According to Hodgdon (60), former Director of the American Gas Association, very little has been done to reduce the level of heat of floor furnaces.

Flammable Fabrics

As reported by Heffron (61), the Senate report on flammable fabrics stated:

> Each year thousands of men, women and children are burned, many fatally when their clothing accidentally catch fire. Thousands more are burned from bedding and other fabric fires.
>
> The Public Health Service estimates that one million people are burned in the home each year; 150,000 persons suffer injuries as a result of the ignition of clothing. The death toll from human burns is itself shocking---an estimated 2,000 to 3,000 each year. Deaths from fire rank third behind traffic accidents and falls as the chief cause of accidental deaths and injuries in this country. . . .
>
> Perhaps one of the most tragic aspects of these fabric burns is that an unusually high proportion occur amongst those who are least able to help themselves---the aged, the disabled, the poor, and young children.

Burns from clothing have involved three factors; flammable fabrics, the behavior of the wearer, and the presence of a source of heat. The ignition of fabrics has occurred in large numbers of childrens' sleep wear bed clothing, and upholstered chairs (60). A study by the U. S. Public Health Service and the University of Michigan over a period of 4 years with 15 hospitals participating reported 4,900 burn cases of which more than 50 per cent were associated with fabric ignition (62).

A burn study in Tennessee indicated that, of the 308 burn cases reviewed, clothing ignition burns to Tennessee children accounted for 40.8 of the cases (62). In this study an "avoidability rating" was set for various types of burns. The preventability of clothing and flame burns ranked highest. In terms of "severity rating" by types of burn accidents, clothing burns ranked the highest. In fact, the severity of clothing burns was almost double that of the next type of burn accident.

A total of 231 consecutive patients with second and third degree burns admitted to the University Hospital in Oklahoma City were studied during a 5-year period (63). Of the total, 66 per cent [153] involved the ignition of clothing. Sixty-one per cent [141] of the burn victims were under 12 years of age, 39 per cent being pre-school age. The female to male death ratio was 31:1.

In California, a three year analysis was made of deaths of children through the age of 19 from burns from ignited clothing. A total of 76 deaths included five boys and 59 girls less than 9 years of age and 12 girls in the age group from 10 through 19 (64). It has been determined that females were involved in more burns associated with flammable fabrics than males, which could be due to the type of fabrics from which female clothes were made. This should provide helpful data in establishing burn control programs. A joint study of clothing flammability conducted by the American Academy of Pediatrics Committee on Accident Prevention and the National Fire Protection Association Committee on Wearing Apparel reported 84 burn cases from

ignited clothing, 41 of whom were children under 16 years of age (65).

Burns from flammable fabric have cost this country many millions of dollars. An example of the direct cost to one family can be seen in the medical treatment to a 7-year old girl who received burns to 55 per cent of her trunk and all her limbs (66). In 15 months, she received 15 skin grafts and 10 further operations; other treatments were required during the next 5 years to correct the contractures. Medical expenditures for one victim may run as high as $60,000.00.

Space Heaters

Each year space and wall heaters injure about 35,000 people, about 50 per cent of these injuries result from bumping against the heaters (67). Most of the children injured by this source were under 6 years of age, and they were playing or otherwise preoccupied when they were burned. In some cases of burns, there were delays in seeking medical attention and infection often resulted. Space heaters have been involved more in injuries to low income families for obvious reasons. These heaters have caused a problem with catching clothing on fire and producing very serious burns to victims who panic or victims who cannot care for themselves.

Fireworks

Each year there have been between 10,000 and 15,000 injuries and several deaths in which fireworks were involved (59). The body location to which injuries most frequently occurred was the hands (30 per cent), eyes (27 per cent), and head (13 per cent). About 55 per cent were first degree burns; 35 per cent second degree burns and 10

per cent third degree. Children and young adults were the primary victims. About 6 per cent were under 6 years, 23 per cent between 6 and 10 years; 29 per cent between 11 and 15 years; and 14 per cent between 16 and 20 years of age. The people who suffered from fire works injuries were holding them or in the vicinity when they were used.

Electrical Appliances and Hot Substances

Children have pulled such appliances as electric percolators, vaporizers, irons and hot plates onto themselves. Each year there have been an estimated 50,000 burns from electrical appliances caused by the appliance itself or from the contents therein (59, 68).

From a study done for the Injury Control Program of Denver, there were 31 cases reported of persons burned from the contents of coffee pots in January 1967 (68). Also from reviewing the Colorado State death certificates it was noted that in February 1964, a 1-year old male was burned over 40 per cent of his body from upsetting a coffee pot. He died as a result of the injury (68). The National Burn Information Exchange in Michigan reported 24 cases of persons being burned from the contents of coffee pots in January 1967.

A study conducted at Louisiana State University indicated that of the 106 burn victims the 0-to-5-year age group suffered the most from burns. Table 9 shows the type of burn by age distribution on these data (69).

The younger sector of the population suffered more from burns than did the other age groups. Burns have caused major psychological

damage to the population of this society.

TABLE 9

BURNS BY AGE DISTRIBUTION OF PATIENT

Age	Type of Burn				
	Scald	Contact	Grease	Flame	Total
0 - 5	15	22	1	3	41
5 - 10	8	4	6	6	24
11 - 20	5	5	2	3	15
21 - 30	1	0	0	1	2
31 - 40	1	0	2	1	4
41 - 50	2	1	2	1	6
51 - 60	3	1	1	1	6
61 - 70	0	2	1	1	4
71 - 80	2	0	1	1	4
TOTAL	37	35	16	18	106

Toys and Playground Equipment

In 1972 the American population spent more than 3 million dollars buying toys (70). Many of those toys contained nonsafety glass which resulted in serious cuts and scratches to children under 8 years old (71). At least 22 parents have sued the manufacturer of an Etch-a-Sketch toy for laceration suffered by their children from

broken glass panels (8).

The U. S. Public Health Service estimated that toys injure 700,000 children every year, another 500,000 a year have been injured on swings and 200,000 on slides (8). Injuries from toys have often resulted from predictable misuse; however, many of the injuries resulted from unreasonable hazards inherent in the toy; for example, the Little Lady's toy oven which reached temperatures above 300°F on the outside and 600°F on the inside (8), and the Zulu Gun which operated by using small darts. These darts have been inhaled by children because they put the wrong end of the gun into their mouth. A child can be expected to put the wrong end of a blow gun into his mouth, and to dismember a doll to expose sharp pins that hold the arms and legs.

The Federal Hazardous Substance Act, as amended by the Child Protection and Toy Safety Act of 1969 was passed to eliminate by Statutory power any hazardous toy or product intended for the use of children (72). To date a total of over 800 toys have been banned as a result of that law and standards have been evolved to control the design and manufacture of new toys (72). The Toy Manufactures of America estimated that there are currently 150,000 different kinds of toys and 5,000 new ones are introduced each year (72, 73) making the problem of finding safe toys in today's society far more complex. The child Protection and Toy Safety Act has been in existence for almost 3 years and the number of accidents associated with toys and other products has grown according to Nader (74), the New York Times

(75), and The Oklahoma Journal (70).

The growing number of childhood injuries from toys and playground equipment have caused the Food and Drug Administration to establish a Bureau of Product Safety, with a Division of Children Hazards. The Division has started working on methods to reduce the number of injuries associated with unsafe toys.

The National Electronic Inquiry Surveillance System (NEISS) was established to identify product hazards through a nation-wide system with 119 hospitals emergency rooms (76). Information was fed into a central computer in Washington every 24 hours, and field investigations on product related injuries was done with the approval of the injured or their relatives. The data from NEISS have been used to determine the extent of products that produced more injuries over a certain period of time and therefore allowing for correction of their faults or removal from the public market.

Bicycles

For more than a century the bicycle has been used in the United States as a recreational medium for children and adults. Some unwanted side effects of affluence have intruded upon the American consciousness; however, a new role for the bicycle has emerged. Waller (77) stated:

> It is now a contribution to the health of physical fitness that can help avert cardiovascular ills. Simultaneously, this type transportation does not pollute and thus reduces both the risk of respiratory distress and the fears of humanity that threatened with cooking on its own gaseous effluent.

Bicycles sales have boomed increasing from about 3.6 million in 1960 to about 8.4 million in 1969 (78). A new design of bicycle

has been introduced and comprised 70 per cent of all bicycles sold in 1968 (8, 77, 78). The unsafe design of these high rise bicycles have caused more injuries than the classic models. The Commission on Product Safety reported that: (79)

> The high rise model was introduced and marketed with what appears to be perfunctory pre-market design evaluation and testing for safety. . . that paid little attention to human engineering, possible misuse or crash studies.

Industry wide safety standards have been absent.

During July 1, 1971 through October 31, 1972, NEISS collected data on 17,827 injuries associated with bicycles (79). The majority, 72 per cent of the victims suffered either lacerations or contusions and abrasions. Fractures were third, accounting for 13 per cent of the injuries. There was a broad distribution among body parts injured; however, it must be remembered that the high rise bicycles required more skill to operate therefore contributing to excessive facial injuries and because of the over sized gear shift, to genital injuries. Almost twice as many males as females suffered injuries, Table 10 shows age and sex distribution on these data (79).

Reasons for accidents were similar for both sexes in all age groups; losing control was one of the most common factors cited in bicycle accident investigations. In many cases loss of control followed some other factors such as riding double, stunting, and foot slippage, or resulted from poor design or component failure.

The NEISS estimated that there has been approximately 1,019,300 bicycle related injuries treated in emergency rooms in the continental United States each year. Some of the injuries were very severe such

as spokes having caused amputation of the foot (80).

TABLE 10

PERCENTAGE AGE AND SEX DISTRIBUTION OF BICYCLE ACCIDENTS

Age	Percentage	Age	Percentage
0 - 4	12	25 - 34	3
5 - 9	38	35 - 44	1
10 - 14	33	45 - 54	1
15 - 19	9	55 - 64	1
20 - 24	3	65+	Less than 1
	Sex	Percentage	
	Males	65	
	Females	35	

During the period July 1, 1972 through October 31, 1972 NEISS collected data on 1,059 injuries associated with minibikes (81). Sixty-five per cent of the victims suffered either lacerations or contusions and/or abrasions. Fractures were next accounting for 14 per cent of the injuries. Over half, 52 per cent, were leg injuries with arm and head injuries following at 19 and 18 per cent respectively. Almost one half, 49 per cent, were to children 10 to 15; approximately one fourth, 21 per cent were to persons 15 to 20. Children 5 to 10 accounted for 13 per cent. Four out of five injuries were to males. From NEISS it was estimated that there have been approximately 63,000

minibike injuries treated each year in emergency rooms in the continental United States. Minibikes have been noted to produce more accidents around the American home than on highways and street accidents.

Lawn Mowers

Lawn Mower injuries have increased in recent years primarily because of the invention of the power mower and because of the affluence of the American society with the growing population in suburbs. A Public Health Survey study estimated there were 55,000 to 80,000 injuries from power mowers (8). In 1969, the Department of Health, Education, and Welfare estimated the annual rate of injury from power mowers to be 140,000 (82). Of 12,726 cases of injuries reported by physicians, in 2 weeks of April 1969, to the National Commission on Product Safety, 418 were linked to power mowers.

Children's Hospital of Columbus, Ohio reported 17 power lawn mower injuries to children during the period June 1966 to September 1969 (83). The 17 children were admitted because of the extent of the injury, they ranged from age 2 to 12 and there were 12 boys and five girls. At the time of the injury four were bystanders, six were operating mowers and seven were passengers riding with their parents on mowers of the tractor type. About 27 million power mowers were in use in 1969 in the United States, and yearly sales exceeded 5 million (8).

Accidents associated with power mowers have been reported to fall in three distinct patterns of activity at the time of injury (83),

bystanders, operators, and passengers. It was interesting to note that most of the childhood injuries which have occurred from power mowers could have been prevented if the bystander had been kept at safe distance, if the operation of power mowers had been restricted to children who had passed their 13th birthday, and if passengers had been prohibited from riding on the tractor type mowers (7, 82, 83).

Other High Risk Products

Infant furniture includes, cribs, stroller, playpens, walkers, highchairs, and dressing tables. Ill design of infant furniture and lack of supervision have caused an increase in severe injury due to falling, in the age group under 1-year (8). As reported by the Northwestern University Medical School, 1,750,000 infants will sustain injury because of a fall during the first year of life, due to infant furniture. It has been estimated that over 700,000 cribs were purchased in 1969 and cribs alone have accounted for over 400 deaths a year in the United States (8).

Glass bottles and glass doors have posed another major problem to children under 15 years old. "What you cannot see, can hurt you," was stated in a report of glass injuries prepared by the Bureau of Community Environmental Management of the Department of Health Education and Welfare, and aptly describes the causitive aspect of the injuries received by children especially from glass doors (84).

SUMMARY

There have been many reports on the deaths and injuries associated with consumer products, but there has been relatively little expenditure of effort in evaluating the situations or conditions which have resulted in these product related accidents.

In a testimony on June 16, 1971, before a subcommittee of the House Committee on appropriations, Dr. Bergman (84), Director of Outpatient Services at Children's Orthopedic Hospital and Medical Center in Seattle, Washington, stated:

> Recently at a large children's hospital the case of a young child was discussed who had retained a heart transplant for a month before dying. There was much enthusiasm expressed by the surgeons and immunologists who had accomplished this tremendous feat. They are all ready to try it again. Not surprisingly, no mention was made of the heart donor. He happened to be a healthy youngster riding in the back seat of a car traveling at 10 miles per hour when it was struck at an intersection. He was not in his seat belt. Both children should be alive. . . but consider the attention given to prevention.

Not much attention has been given to prevention of accidental injury. The National Institute of General Medical Science for research into traumatic injury stated that $238 have been spent annually per cancer patient for research on cancer and only 50 cents per trauma patient (85). According to a report of the activities of local health departments in the United States only 0.59 per cent of available man hours have been devoted to accidental injury control activities.

The accidental injury situation involves the product, the role of human behavior, physical, emotional and mental states of the person when using the product and the environment in which the product is

being used. Until these major areas can be studied and shown concrete pathological steps, accident injuries will continue to be called the "permissive killer." Since the magnitude of the problem has become clear, it also has become obvious that additional study is necessary especially in the qualification of the role of human behavior.

CHAPTER III

PURPOSE AND SCOPE

Much research has been done in the field of accident prevention making less hazardous the environment in which man lives, works, drives, and plays; however, less attention has been given to other factors such as the social attitudes of people involved in accidents. It has also been noted in recent years that many accidents involve social situations which have been characteristic of this social system (25). Therefore it was felt that accidents should be viewed by considering both the environment in which they occur and social settings at the time of occurrence, plus the social attitudes of the people involved.

It has been shown that the injuries and the mortality rate associated with consumer products can be reduced. The purpose of this study was to determine the number and kind of accidents occurring among youngsters from age 0 to 16. It was also the purpose of this study to evaluate the nature of these accidents and the causes, using the multidisciplinary approach, with special attention on human factors.

Since the multidisciplinary approach would involve the field theory method of analysis, which would include the total accident producing situation it became the model of choice. In order to apply the field theory, it would be advantageous to minimize the effects of

certain parameters; thus, the test population should be as homogeneous as possible with regard to economic status, ethnical mix and educational levels. The emergency room was selected to meet these criteria, and the records were surveyed. The research protocol involved a study period totaling 4 months, seasonally spaced, in order to obtain totals and types of injury and in-depth data would be secured on no less than 100 cases in order to determine the principle cause of the accident.

This study was designed to identify the agent involved, the mechanism by which that agent came into play, and the causes in terms of combine effect originating from human factors or host, agent and environment. It was felt, however, that there were almost as many agents as there were accidents, and the environment has been controlled to a greater extent than human factors; therefore, the host would be the link of the chain which holds the key to accident prevention.

It was felt that the investigative techniques developed as well as the information obtained from this study could be used by City and State Health Departments to determine the need for consumer safety programs, especially directed toward the younger sector of the population. Other communities could use this pertinent information to compare and control the magnitude and complexity of their accidental injury problem.

CHAPTER IV

MATERIAL AND METHODS

This study was conducted in three phases. Phase One consisted of a retrospective study of emergency room records to secure data on the number(s) and kind(s) of consumer product related injuries. Emergency room admission records were examined at the Norman Municipal Hospital in Norman, Oklahoma. This hospital was selected to provide a review of accidental injury admissions in a small area and serving a population of about 70,000. Since it provided the only emergency room service for this community, it had the advantage of serving the bulk of the population not seen in the offices and clinics of private physicians. This hospital also had the additional advantage of serving a population with limited educational, ethnical and economical variables.

The retrospective study covered 4 months of admission of all ages to Norman Municipal Hospital's emergency room. To allow for seasonal variation, data were extracted from emergency room records for the months January, April, July, and October of 1971. An accident injury survey form (Appendix A) was utilized for the collection of pertinent data about each injuried individual. For those individuals who were hospitalized, additional information was extracted from their hospital records.

This phase was necessary to determine if sufficient numbers of accidents were occurring in the target population of Phases Two and Three, namely the 0 to 16 age group. It would also give insight into the most hazardous types of products. Phase Two of this study involved a design of an in-depth questionnaire to be used in future studies of accidentally injured persons. The questionnaire was designed and tested by interviewing injured victims. These interviews were conducted by the author, who contacted the injured person or his family and administered the questionnaire to see if it supplied the information needed to complete the study.

The questionnaire consisted of a general information section and four categorical sections. (Appendix B). The general information section was designed to accumulate data relative to number(s) and kind(s) of injuries, and to identify the injured individuals. Questions 2 and 15 of the general section were designed to give information on the actual situation or conditions present at the time of the accident. These data were utilized to evaluate the environmental factors involved.

Questions 11 and 12 were designed to give information on the number of times a victim was involved in an accident to attempt to measure the probability of recurrence of accidental injury.

Questions 6, 7, 16, 17, 18 and 19 were designed to accumulate data on the effect of parental supervision in accidental injury situations.

The balance of the questionnaire was divided into four categories of accidental injury: (a) toys (including bicycles), (b) products,

(c) falls, and (d) burns. The four categories of the questionnaire were designed to determine the type of products involved in accidental injuries. These sections also supplied data on the use of the products at the time of the accident. After the questionnaire was tested on more than 20 accident victims it was redesigned and tested again until it proved satisfactory in supplying the information needed to complete the study.

In order to produce numbers in each category, that is, to secure data on a larger number of injuries, Phase Three was designed.

This portion of the study was accomplished by mailing out the tested in-depth questionnaire (Appendix B) to accident victims or their families. The victims names and address were accumulated from the log of emergency room admissions at the Norman Municipal Hospital. The data base was selected from 2 weeks of each months' admissions for accident victims from age 0 to 16, over a period of 11 months starting in July 1972 through May 1973. Mailed along with the questionnaire was a letter (Appendix C) explaining the purpose of this study, and a stamped addressed envelope for returning data. Appendix C contains only the text of the letter which was mailed on Center for Safety Research stationery. This phase of the study produced actual numbers of accidental injuries to children from 0 to 16 years old.

Upon return, the responses were grouped into four categories of injury: products, falls, burns, and other. The second part of the analysis was the submission of the accident facts to a panel for a determination of the primary cause of the accident. The panel was

composed of an environmentalist, a behaviorist and a person primarily concerned about the product or object involved. Each questionnaire was presented to the panel individually and a tally of votes by the panel was recorded in three areas: (a) was the human behavior the primary cause of the accident, (b) was the environmental conditions the primary cause of the accident, or (c) was the design of the product the primary cause of the accident.

CHAPTER V

RESULTS AND DISCUSSION

The first phase of this study consisted of a retrospective analysis of January, April July and October admissions to the emergency room of the Norman Municipal Hospital Norman, Oklahoma. During the 4 months sampled there were a total of 5,014 admissions to the emergency room for all causes. Of this number, 1,542 or 30.7 per cent of the emergency room visits were the result of accidental injury and 323 or 21 per cent of these visits were directly related to those items categorized as consumer products by the National Commission on Product Safety. The yearly projected total admissions to the emergency room for 1971 was 15,042, and the yearly projected total for accidents was 4,626. The yearly projected admissions for product related injuries was 989.

Of the 323 product-related injuries, 220 involved nine of the product groups identified by the Commission: bicycles, toys, glass, razor blades, household chemicals, lawn mowers, hand and power tools, cutlery and playground equipment. The other 103 product injuries were distributed over several other categories with little repetition. ("Product groups" here refers only to the Commission's categorization scheme for all products and not to groups known to cause injury). Due

to the high involvement of the nine-product group, the data presentation has been limited to these "high risk" products. The distribution by age of patient and product group is shown in Table 11.

Bicycles were involved in more injuries than any other single product group. During the 4-month study period, there were 58 persons injured while riding bicycles, with over 50 per cent of the victims being under the age of 9, and 70 per cent being less than 14 years of age. Bicycle collisions with automobiles accounted for only three of the total 58 injuries. An important finding involved the 11 injured children in the under 4-year old age group. Almost all of the injuries occurred while these children were riding on bicycles with one of their parents. Several were riding on commercially available "infant seats" and caught their foot or leg in the spokes causing lacerations or fractures.

Toys accounted for 12 injuries to children 9 years of age or younger; however, no particular toy could be implicated since brand names or types of toys were usually not included on the emergency room record. One interesting case involved a 2-year old child who ingested a number of chemicals from his older brother's "toy" chemistry set, which caused severe burns and demonstrates the fallacy of notions of "expected age user."

Glass products accounted for 50 of the 220 injuries and was the second most frequently identified category. The bulk of the injuries included soft drink bottles, candle holders, architectural glass, and numerous other products. The products included in this group were

TABLE 11

DISTRIBUTION OF MOST FREQUENTLY CITED
PRODUCTS BY AGE OF PATIENT

Age	Bicycle	Toy	Glass	Razor Blades	Household Chemical	Lawn Mower	Hand and Power Tools	Cutlery	Playground Equipment	Total
0-4	11	8	1	1	7	--	--	1	5	34
5-9	19	4	5	--	--	--	--	--	6	34
10-14	15	--	11	--	--	2	2	4	3	37
15-19	6	--	7	1	1	1	6	2	--	24
20-24	3	--	12	1	--	--	8	8	1	33
25-29	1	--	6	--	1	--	3	3	--	14
30-39	1	--	2	1	--	1	3	3	--	15
40-49	1	--	4	--	--	--	2	2	--	11
50-59	1	--	--	--	--	1	3	3	--	10
60-69	--	--	1	1	--	2	1	1	--	6
70-79	--	--	--	--	--	1	--	--	--	1
80+	--	--	1	--	--	--	--	--	--	--
Unknown			1							1
TOTAL	58	12	50	5	9	8	36	27	15	220

difficult to analyze since many of the entries in the emergency room records were brief and included only such statements as "pop bottle, glass, windows, glass door, etc."

Hand and power tools were involved in 36 of the 220 product injuries. Home shop power tools such as electric welders, portable circular saws, planers, and drills accounted for the majority of the injuries, although some of the injuries resulted from contact with lawn rakes, shovels, hand saws and other hand tools. Lawn mowers were involved in eight of the injuries and most involved the victim being struck by objects thrown by the lawn mower. Most of the hand and power tool injuries occurred to middle age range.

There were 15 injuries suffered by children while playing on playground equipment such as swing sets, slides, merry-go-rounds. Almost all of these injuries were the result of falls from this equipment.

The overall distribution of the 220 injuries from the nine most significant product groups by month is shown in Table 12. Bicycles were involved in more injuries than any other product during April and July, which was expected because of kinds of activities occurring during summer months. Lawn mowers and tools also had a higher rate of injuries during the summer for obvious reasons. Playground equipment injuries were high in April and; none were found in July which can be explained by the fact that the data from emergency room records were not adequate and in some cases the place of occurrence could not be identified.

TABLE 12

DISTRIBUTION OF MOST FREQUENT PRODUCT INJURY CATEGORIES BY MONTH

Product	January	April	July	October	Total
Bicycles	5	18	34	1	58
Toys	6	1	2	3	12
Glass	7	14	12	17	50
Razor Blades	1	2	1	1	5
Household Chemicals	6	1	1	1	9
Lawn Mower	0	3	4	1	8
Tools	9	9	14	4	36
Cutlery	7	6	6	8	27
Playground Equipment	4	8	-	3	15
TOTAL	45	62	74	39	220

The analysis of cost for product related accidental injuries were determined for emergency room treatment during 1971 using the charges from the form (Appendix A). The total projected cost for product related accidental injuries was $21,000. This figure does not include cost of product related injuries which required hospitalization, which would be expected to be much higher than out patient treatment, because of the increased severity of these injuries, and hospital costs for room and board. The $21,000 average annual figure also does not include cost of accidental injuries from falls even though some of the falls were associated with products. The figure includes only injuries that were caused directly by products. Injuries resulting from falls have been noted to cost comparatively more with respect to some other injuries because of the nature of injuries produced by falls (30, 55). Falls usually resulted in fractures, dislocations and abrasion, and the cost for these types of injuries was higher because of the kind of initial treatment needed plus the extended treatment required. Even using the conservative figure of $21,000, the average emergency room visit with a product related injury cost of $21.80 and a cost of $0.30 cent per capita served by the emergency room. If this figure were stable for the State of Oklahoma, the people would have a direct cost of $750,000. Indirect cost have commonly been estimated as equal to direct cost, so that the total of direct and indirect cost to the state would be $1,500,000 annually. Any problem with costs of this magnitude deserves a considerable investment in a control program.

The place of occurrence for the 323 product related injuries

varied: 190 occurred at home, 48 at work, four at school, seven in recreational areas, seven on highways, and unidentified places accounted for 67 injuries. Since most of these injuries occurred in and around the home, this finding was compatible with the national figures on accidental injuries.

The results of Phase Two of this study yielded the design and tested the questionnaire. This questionnaire supplied the information needed to complete Phase Three of the study.

Table 13 shows the total admissions to the Norman Municipal Hospital over the 11 months studied in Phase Three, as well as the admissions of the target population.

The admissions to the Norman Municipal Hospital emergency room totaled 15,642 over a period of 11 months yielding a projected yearly admission total of 17,064 as compared with the 15,042 projected from Phase One data. The average monthly admission to the emergency room was 1,422 with July, August, April and May above average and October, November, December, January, February and March below average. September was almost average and May had the highest number of admissions. Thus the rate of admission followed a definite pattern, higher in summer and lower in winter. This was expected because of the increase in the number of persons engaging in more hazardous activities at home during the summer months plus the increase in outdoor activities. The total admissions to the emergency room of ages 0 to 16 over the same 11 months was 4,601 yielding a yearly total of 5,019. Admissions for this age group comprised about 30 per cent of total admissions, these

TABLE 13

EMERGENCY ROOM ADMISSIONS, NORMAN MUNICIPAL HOSPITAL
JULY 1972 - MAY 1973

Month	Total Admissions	Admissions 0 - 16 Years
July	1539	568
August	1445	408
September	1422	439
October	1408	391
November	1262	385
December	1372	415
January	1396	346
February	1237	332
March	1383	379
April	1458	401
May	1720	537
Total	15642	4601
Average	1422	418

figures also followed a distinct pattern in time, higher in summer and decreasing in winter. A possible explanation for this may be the increase in outdoors activities for youngsters, often without supervision during the summer. July admissions were highest in the 0 to 16 age group.

With this emergency room serving a population of about 70,000, the yearly figures indicated a user rate of 21 per cent for Phase One data and 24 per cent for Phase Three data, which is considerably lower than the national average of 38 per cent (86). This might have indicated that this population, being more highly educated than the national norm and has a higher economic status, was better able to secure medical aid through private physicians. Private physicians and clinics, home treatment and in-patient care for emergency treatment of accidental injuries, have been estimated by NEISS to be 41, 18, and 3 per cent respectively (86).

Of the total number of questionnaires mailed, 32 per cent were returned, which was within the range anticipated because of the higher than average educational and economic levels in Norman. The majority of the responses to the questionnaires were received within 10 days after they were mailed.

The 120 response questionnaires were then placed in four categories; product associated, falls, burns and miscellaneous or other. It should be noted that since the product associated injury was of major interest, this category was given preferential treatment. In the categories of falls and burns, if a product was involved, it was

placed in the product category and not double counted. This yielded 80 product related injuries; 28 falls, four burns, and eight other injuries.

The facts of each accident were presented to the review panel. The accidents were reviewed by categories with the three specialists being asked to vote for what they believed to be the primary cause of the accident. Primary causes were limited to human behavior of the victim or those around him, the environment, or the product design.

The primary causes of all accidental injuries were human behavior 85 per cent, with environmental conditions causing 8 per cent and product design 7 per cent. In the four categories, human behavior was primarily responsible for 84 per cent of the product injuries, 86 per cent of the falls, 100 per cent of the burns and 100 per cent of the others. Environmental conditions were the principle cause in 14 per cent of the injuries in the fall category and 6 per cent in the product. The product design was primarily involved in 10 per cent of the injuries in the product category.

An analysis of these data also yielded the type of accidents, the type of products involved and the person who was being effected. Responses of 120 questionnaires supplied scattered data. However, on the kinds of products involved, it was concluded that certain products, bicycles, skates, slides (including other recreational equipment), glass, nails, ingestion of non-prescription drugs, and a few other products showed a higher frequency involved in accident injuries than did some other products. The number or kind of product varied

widely producing numbers not sufficient to determine the extent one product was involved over another; however, the NEISS data on product injuries for fiscal year 1972 showed results which coincide with the results found in this study (86).

The type of accident reported varied from damage to most parts of the body to more serious internal injuries. The data showed the highest incidence of injuries to the head, with fewer cases involving the trunk and extremities. The injuries to all body parts ranked highest in laceration 48 per cent, contusion and abrasion 20 per cent, and fractures 11 per cent with sprain concussion and burns accounting for the other injuries.

The data showed an increase in treatment to children from 0 to 5 years of age associated with certain products. Namely the ingestion of non-prescription drugs and household chemicals.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The first phase of this study consisted of a retrospective analysis of January, April, July, and October 1971 admissions to the emergency room of the Norman Municipal Hospital Norman, Oklahoma, the only emergency room providing services for a population of 70,000. This phase was designed to secure data on the number(s) and kind(s) of consumer product related injuries occurring in a small population, at the same time limiting parameters such as educational, ethnical and economic variables. During the 4 months sampled in this phase there were a total of 5,014 total admissions to the emergency room for all cases. Of this number 1,542 or 30.7 per cent of the emergency rooms visits were the result of accidental injury and 323 or 21 per cent of these visits were directly related to those items categorized as consumer products by the National Commission on Product Safety. The yearly projected total admissions to the emergency room for 1971 was 15,042, the yearly projected total for accidents was 5,626, which is approximately 37 per cent of the projected total admission. The yearly projected admissions for product related injuries was 989 which is approximately 17.6 per cent of the yearly admissions of all accidental injuries.

Phase Two of this study involved a design and field testing of

an in-depth questionnaire to be used in future studies of the accidentally injured person. These interviews were conducted by the author, who contacted the injured person or his family and administered the questionnaire to see if it supplied the information needed to evaluate the accidental injury.

The questionnaire consisted of a general information section and four other categories. The general information section was designed to accumulate data relative to number(s) and kind(s) of injuries, and to describe the actual situations or conditions present at the time of the accident. This section also provided information on the number of times a victim was involved in an accident to attempt to measure the probability of recurrence of accidental injury. Questions were also included to accumulate data on the effect of parental supervision in accidental injury situations.

The four other categories of accidental injuries were toys (including bicycles), products, falls, and burns. These categories were designed to determine the type of products involved in accidental injuries. These sections also supplied data on the use of the products at the time of the accident.

In order to produce numbers in each category, that is, to secure data on a larger number of injuries Phase Three was designed. Phase Three of this study was conducted by mailing out the tested in-depth questionnaire to accident victims or their families. The victims were identified from the log of emergency room admissions at the Norman Municipal Hospital. The data base was selected from 2 weeks of each

month's admissions for accident victims in the age range of 0 to 16 years. This was continued over a period of 11 months starting in July 1972 through May 1973 and produced 120 responses. These responses were then presented to a review panel of various disciplines for evaluation of the causes of product-injury. The panel placed the cause of each injury in one of three major areas (a) human behavior, (b) environmental factors, or (c) product design.

Based upon the results and observations of this study, the following conclusions were made.

1. The average emergency room visit with product related injuries costs $21.80, which is a cost of 0.30 cent per capita. If this figure were stable for the State of Oklahoma, the people would have a direct cost of $750,000. Indirect costs have commonly been estimated as equal to direct cost, so that the total of direct and indirect cost to the state would be $1,500,000.
2. Most accidental injuries were primarily caused by improper human behavior by the accident victims or their families. The results of the panel review on all accidental injuries were that 85 per cent of the accidental injuries resulted from human behavior. Environmental conditions present at the time of the accident, and product design accounted for only 15 per cent of the causes. It was concluded by the panel that 84 per cent of the product-injury to youth was due to improper behavior by the victim or other family members. Human behavior also caused 86 per cent of the falls, 100 per cent of burns, and 100 per cent of the others. It was determined from

the data that products were involved in more injuries to youth, than were falls and burns; however, many product related injuries were associated with falls and burns but were consistently placed in the product category. Environmental conditions were the principle cause in 8 per cent of the injuries in all categories. Product design was involved in only 7 per cent of all injuries in all categories.

3. Of the 323 product related injuries, 220 involved nine of the product groups identified by the Commission: bicycles, toys, glass, razor blades, household chemicals, lawn mowers, hand and power tools, cutlery and play ground equipment. The other 103 product related injuries were distributed over several other categories with little repetition. Bicycles were involved in more injuries than any other single product. Toys also ranked high in the number of persons injured.
4. Of the four categories of injuries, product injuries ranked highest with 80 injuries, falls with 28, burns with four and eight other types of injuries.
5. The accidental injuries affected certain age groups differently. Age 0 to 5 suffered most from ingestion of harmful substances, whereas ages older than 8 suffered most from injuries associated with recreational products. However the sample size was not large enough to determine the extent one product was involved over another.
6. The place of occurrence for accidental injuries varied with the majority of them occurring in and around the home.

As a result of this study, the following recommendations can be made.

(a). Further studies should be made and involve large sample sizes and cover more than one emergency room so that comparisons could be made of type of products causing injury and the rate at which different groups of persons are being affected within the user populations. Social and economic status as well as educational levels must be included if accidental evaluation and control programs are to be effective.

(b). Accidental injuries associated with products are costing Oklahoma about $1,500,000. Any problem with costs of this magnitude deserves a considerable investment in a control program.

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APPENDICES

APPENDIX A

ACCIDENTAL INJURY SUMMARY

_____ (Date)

_____ (Patient No.)

_____ AM PM (Time of Admission)

Sex and Marital Status
O0 O1 O2 O3 O4
O5 O6 O7 O8 O9

_____ AM PM (Time of Discharge)

_____ (Date of Birth-Age)

Norman

_____ (Race)

_____ (Occupation)

Other

Arrived by:

O Private Vehicle O Ambulance Other O

_____

ACCIDENT DESCRIPTION

_____ AM PM (Time of Occurrence)

Place of Occurence:

O Home O Work O Lake

O Highway O School O Other

Category: O Motor Vehicle O Motorcycle O Boat O Product _____

O Fall O Burn O Recreation O Other _____

Injury:

Charges:_____

Disposition O RX and Released
O Referred to Private Physician
O Admitted to Hospital

APPENDIX B

QUESTIONNAIRE

General Information:

1) Date_____

2) Describe accident_____

_____

_____

3) Parent name and address_____

4) Telephone No._____Occupation_____

5) Income yearly: __less than $3000, __$4500 to 6000, __$6000 to 8000, __$8000 to 10,000, __more than $10,000

6) Total number of occupants in household: __less than 4, __4-6, __6-8, __more than 8

7) Number of children at this address____; age of these children_____

8) Place of occurrence: __Home, __Work, __School, __Lake, __Highway, __Other

9) Category: __Motorvehicle, __Motorcycle, __Board, __Fall, __Burn, __Recreation, __Product, __ Other

10) How severe was the injury? __Slight, __Moderate, __Very severe

11) Has this child had same accident before? __Yes __No. When?_____

12) Has this child had any other accident within last 6 months? __Yes __No Did it involve a product? __Yes __No. What?_____

13) Have any of the other children had an accident within the last 6 months? __Yes __No. What?_____

14) Is the child very active, curious, industrious, inquisitive, thirsty for knowledge (into something), inquiring mind, can't sit down etc. __Yes __No

15) What was general activity of child at the time of the accident?_____

_____

16) Does the child spend the day at nursery? __Yes __No. Babysitter __Yes __No. Approximately how many other children are with same sitter? __less than 5, __5-10, __10-15, __15-20, __more than 20

17) Was child alone when the accident occurred? __Yes __No

18) Had you just disciplined the child before the accident occurred? __Yes __No

19) About what time did accident occur?_____

20) Can you think of any safety features that could possibly prevent this type of accident?_____

Toys:

1) How long did child own the toy? __less than 3 months, __3-6 months, __6-9 months, __9-12 months, __ more than 12 months

2) Did the child want the toy as a result of TV commercials? __Yes __No If yes, were these commercials mostly on Cartoon type shows? --Yes __No

3) What was the price of the toy? __less than $2.98, __$3-5, $5-10, __$10-15, __$15-20, __$20-30, __more than $30

4) What was the toy?_____

Brand name_____

Where was toy bought_____

5) Was the toy approved for sale? __Yes __No __Don't know. If unknown, how would you check to see if it was banned?_____

_____

6) Did container of toy state any safety instructions? __Yes __No __Don't know

Product:

1) Where was product when injury occurred?_____

2) Was the container closed? __Yes __No

3) In your opinion was the product labeled properly? __Yes __No

Comment:_____

4) Did the product look or smell like food? __Yes __No

Comment:_____

5) What was the product?_____Brand name_____

6) Where was product purchased?_____

7) Was product certified (U.L., Good Housekeeping, etc.) __Yes __No __Don't know

8) Were safety instructions provided with product? __Yes __No __Don't know

9) How long have you used (owned) this product? __less than 3 months, __3-6 months, __6-9 months, __9-12 months, __more than 12 months

10) Do you think the product was packaged properly: __Yes __No

Comment:_____

Fall:

1) Where was the child at time of fall?_____

2) Was the child playing at time of fall?__Yes __No

3) What was victim's general activities at time of fall?_____

_____

4) Was a product involved with fall? __Yes __No

Comment:_____

5) Can you think of any other information about the fall (accident) that might be helpful_____

Burns:

1) Where did burn occur (place)?_____

2) What was the product involved in burn (coals, stove, grease, etc?)

_____

3) What were the general activities of victim at time of burn?_____

_____

4) Were any precautions taken to prevent this type of accident in the past?_____

5) Has child been burned before? __Yes __No. When?_____

How?_____

APPENDIX C

The Center for Safety Research is involved with a project with the Norman Municipal Hospital Emergency Room, Childrens and University Hospital in Oklahoma City. The project is to study accidental injuries associated with consumer products, falls and burns for children ages 0-16 and is designed to gain insight into controlling and preventing accidents.

The Center for Safety Research solicits your help in filling out this questionnaire and returning it to us.

There are five parts to this questionnaire, (1) General Information, (2) Toys, (3) Products, (4) Falls and (5) Burns. Although the questionnaire looks long, we ask that you fill out only the General Information section and any other section which applies to the type of accident in which you or your family members were involved.

The information given us will be used for research purposes only and will be strictly confidential.

Thank you.