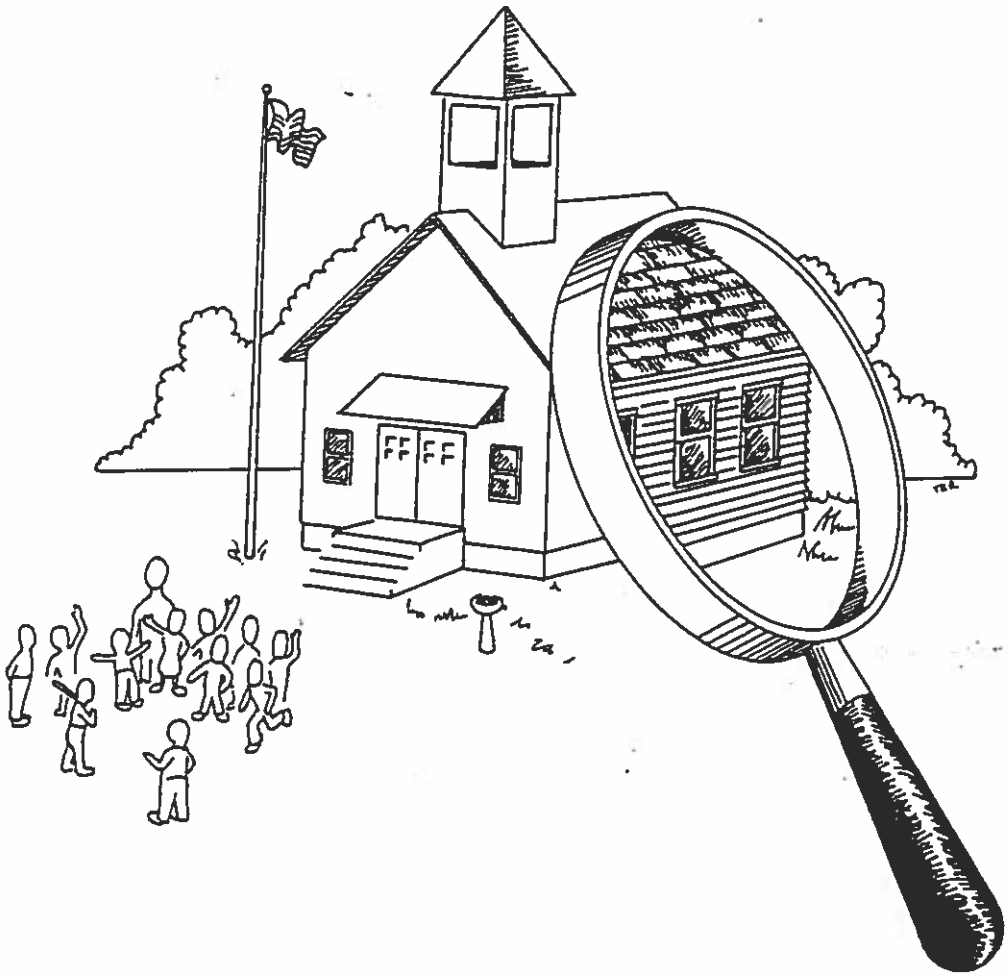
THE SCHOOL INSPECTION MANUAL FOR HEALTH OFFICERS



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THE SCHOOL INSPECTION MANUAL

FOR HEALTH OFFICERS

Mike Hayden, Governor
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Division of Health

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Preface

The School Inspection Manual for Health Officers describes a method, based on current information, to inspect school buildings to assure a sanitary and healthy environment for all students attending Kansas schools.

The manual emphasizes the relationship between environmental actions and public health principles. Assurance of potable water, thermal control, uncontaminated air to ventilate classrooms, sewage disposal, and other environmental controls impact on solutions to public health problems in schools.

Two Kansas laws mandate that a healthy, safe environment in the school be available to all students. K.S.A. 65-202 requires inspection of "each school building and grounds" annually by the local health officer or a designated alternate "for protection of the public health of students of the school." In recognition of the needs of physically handicapped students, teachers and other persons entering the school building, state law (K.S.A. 72-4604) mandates that school buildings include "reasonable provision for making buildings and facilities accessible to, and usable by, the physically handicapped."

Although the local health officer does not inspect the areas covered in Chapter X through XIII, if questions arise applicable to these areas, reference information will be available to share with the school principal for resolution of the problem.

INTRODUCTION

The health officer's school inspection manual is intended to provide educational and reference information about health related environmental standards for Kansas schools. Kansas law (K.S.A. 65-202) mandates an annual "sanitary inspection of each school building and grounds" plus inspection "necessary for protection of the public health of students of the school." The inspection is the responsibility of the local health officer or a qualified person to whom this responsibility has been delegated.

The school environment must be maintained as a healthful, comfortable place that enhances well-being and learning. The school environment includes physical, biological, and social factors, operating simultaneously. The physical environment includes the building and grounds, temperature, light, sound, furniture, facilities and equipment, air, water, and food. The biological environment includes the action and interaction of people, students, teachers, staff, and parents. Obviously, the conditions of any one of these environmental factors affect the others.

The physical factors of the school environment will be discussed more than the biological or social factors. The user needs to be alert to the interrelationship between all three factors to the total environment.

Specific reasons why school environments should be optimum for well-being and learning will be detailed in the chapters that follow. Chapters on "Fire Prevention", "Handling of Chemicals", "Injury Prevention" and "Asbestos Containment" are included to provide an understanding of state regulations to local health officers, school administrators and school nurses. Potential safety hazards discussed in these chapters are not mandated to be inspected by local health officers.

The guidelines of this manual are designed to assist the local health officer or specified delegate, working with the school administrator, school nurse, custodian and parents, to provide careful inspection of the environment in which the citizens of tomorrow are striving to attain today's education.

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CHAPTER I

WATER SUPPLY

GENERAL

Each school must have an ample quantity of potable water that is protected from contamination at the source and throughout the distribution system. An adequate supply of water under pressure must be provided for new buildings, remodeled or altered old buildings, changed food service or other facilities, and increased classroom load.

Where potable water is not available and no treatable sources can be found, water may be transported to the school. This practice must be protected to the same degree and conform to the same standards of quality as piped public water systems. All transportation and distribution operations must be in compliance with recommendations of the local health authorities and under control and supervision of responsible and informed personnel.

To assure the water is pure disinfection under the supervision of a Kansas certified operator is mandatory. Annual permits based on laboratory analysis of local water samples are issued from the Bureau of Water Protection, Kansas Department of Health and Environment (K.S.A. 65-163). The law applies to all schools whether accredited or nonaccredited, public or private.

QUANTITY OF SUPPLIES

The minimum quantity of potable water which must be provided daily varies with the type of school and services provided. Recommended minimum quantities are shown in the table below:

Potable Water Requirements - School Buildings

Types of School	Minimum Gallons Per Day Per Person
Day, without cafeteria, gymnasium, or showers	15
Day, with cafeteria but no gymnasium or showers	20
Day, with cafeteria, gymnasium, and showers	25
Boarding	75-100

In addition to these requirements, provision must be made for additional water for special needs. Estimates for shops, swimming pools, lawn watering, and operation of equipment should be prepared in consultation with the architectural/engineering firm and added to the amount calculated from the table. Also, the system should provide ample water under pressure during peak periods of demand such as the lunch hour and during the changing of classes.

SOURCES OF WATER

1. Public Supply

Kansas statute, (K.S.A. 65-162a,b), defines a "public water system" as a "system for the provision of piped water for human consumption if such a system has at least ten service connections or regularly serves an average of at least twenty-five individuals at least sixty days out of the year." No distinction is made between private and public schools.

Public water supply systems cannot operate without a public water system permit from the Secretary of Health and Environment (K.S.A. 65-163)

If complaints are made to the Secretary of Health and Environment in Kansas, the local health officer or an authorized representative is required to investigate. The supplier of water under investigation is required to furnish a sample of the water used by the school for sanitary quality analysis. Compliance of the supplier of water whether in the source or sources, manner of storage, purification, treatment or distribution facilities is required by the Secretary as indicated by state law K.S.A. 65-163(c) and department rules and regulations.

The Federal Safe Drinking Water Act, Public Law 99-339, defines two types of public water systems: "Non-Community Systems" and "Community Systems." Community systems are those which serve 25 or more year-round residents. Non-community systems serve the same minimum number of individuals as community systems, but the individuals are not year-round residents. Such a system would include those serving resorts, motels, hotels, and some schools.

Even though most school supplies fall in the category of non-community systems, this manual recommends that all schools meet the more stringent standards of the community water system. The justification is that the consumption of water at school during the year is similar to that of residents even though these individuals technically reside elsewhere.

If the school has access to a community water system operated by a municipality, water supply district, or private corporation, it will be regulated and monitored according to K.S.A. 65-163 or Public Law 93-523. It is strongly recommended that all schools use a community water supply when feasible.

Where no community water system is available, it will be necessary for the school to construct its own non-community system. Planning for and building a private water system requires the aid of a registered professional engineer competent in water system construction. At the onset of the planning a Kansas Department of Health and Environment engineer should be consulted to advise the school board about the state requirements.

2. Private Supply

Neither the Safe Drinking Water Act nor the State law applies to those schools that construct their own water system and serve less than 25 individuals daily. Supplies serving schools in this category should follow the recommendations cited in the preceding paragraph. Such systems must comply with applicable State and local standards. In all cases the water must be monitored for microbiological quality and adhere to the public water microbiological standards. Every effort should be made to provide water that is free from known toxic chemicals.

WATER QUALITY

The standards for drinking water quality and monitoring requirements of the State and National Safe Drinking Water Act should be maintained.

1. Maximum Contaminant Levels - Inorganic Chemicals

For selected toxic chemicals, the Environmental Protection Agency has established maximum contaminant levels which apply to community water systems. Of these, only the level for nitrates applies to noncommunity water systems. The 1987 standards for various chemical contaminants are shown in the following table:

Maximum Contaminant Levels - Specified Chemical

Contaminant	Maximum Contaminant Level, milligrams/liter
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.02
Mercury	0.003
Nitrate (as N)	10.0
Selenium	0.045
Silver	0.05
Fluoride	2.0

2. Maximum Contamination Levels - Organic Chemicals

Although maximum contaminant levels for certain organic chemicals have been developed, these standards are under constant review and subject to revision and expansion of the substances covered. The procedures necessary for monitoring the presence of these substances are quite complex. School authorities should rely on advice from the Kansas Department of Health and Environment which is responsible for enforcement of the Safe Drinking Water Act.

3. Maximum Contaminant Level - Microbiological

All potable water supplies should be monitored for the presence of coliform bacteria as an index of contamination by pathogenic microorganisms. Essentially the requirement is that no more than one coliform be found per 100 ml of sample examined.

BACTERIOLOGICAL CONTROL

In those cases where an on-site water system is involved or where water is transported, it will be necessary to provide a disinfection system. At the present time, the most common method of disinfection is by the use of chlorination. It is imperative to obtain the advice of health authorities before installing and operating a disinfection system.

MONITORING

Both private and public water systems must routinely monitor the quality of their drinking water using a certified laboratory. Microbiological samples and less frequently samples of various other quality parameters are checked. If the system fails the quality check repeatedly the owner must publicly notify the users. Failure to monitor will result in public notification. The monitoring program is the most common method of checking the integrity of a water system. Nearly all public water supplies, except the largest, utilize laboratory services of the Kansas Department of Health and Environment for routine monitoring. An annual fee is charged for the laboratory service.

CERTIFIED OPERATOR

Each local water and wastewater system is required to be under the supervision of a Kansas certified operator by Kansas statute (K.S.A. 65-4501). Training sessions and examinations are available throughout the year.

Chapter II

PLUMBING

GENERAL

A properly designed plumbing system must maintain the supply of potable water under pressure while also protecting it from contamination. The water must be distributed throughout the building to a sufficient number of accessible, convenient, and clean fixtures. The sanitary sewage system must function reliably to collect sewage and convey it in a sanitary manner to the treatment plant. Plumbing fixtures must also be of sufficient number, proper design and kept clean. Kansas school systems and local agencies subscribe to a code of standard design and performance for plumbing systems. As with other facilities, the school authorities should seek the advice of appropriate professionals concerning compliance with local codes and state standards mandated by the Uniform Plumbing Code to be used in the design of the plumbing system.

FACILITIES

1. Lavatories

Lavatories should be conveniently located throughout the school plant. Lavatories should be located adjacent to cafeterias, in classrooms of lower grades in elementary schools, and in cafeteria-kitchen areas. State or local codes governing food service establishments must be followed for installation of lavatories in food service areas. Lavatories in toilet rooms should be placed so that students will pass them upon leaving the room. Lavatory fixture-to-occupant ratios according to the Uniform Plumbing Code is 1:50 for students. In toilet rooms serving large numbers of people, e.g. gymnasiums, auditoriums, the ratio is 1:200, and over 600, 1:500 persons. Each lavatory must be provided with hot and cold water under pressure tempered by a mixing valve or combination faucet. Any self closing, slow closing, or metering faucet must be designed to provide a flow of water for at least 15 seconds without the need to reactivate the faucet. A supply of hand cleaning soap or detergent must be available at each lavatory. A supply of sanitary towels or a hand drying device providing heated air should be conveniently located near lavatories. Common cloth and reusable towels are prohibited. If disposable towels are used, easily cleanable, covered waste receptacles should be conveniently located near the hand washing facilities.

Although Kansas does not have a maximum safety water temperature school standard or law, reduction of hot water temperature to 120°-130° F. will protect students from scald burns.

2. Water Closets and Urinals

Water closets should be located in toilet rooms on each floor where classrooms are located. In some schools, toilet facilities have been installed in each classroom for children five to seven years of age. Where this is not done, toilet rooms should be separated for use by younger and older pupils. This may be accomplished by locating toilet rooms near the appropriate classrooms. In each toilet room for general use, no less than two water closets should be provided. Trough-type urinals are no longer allowed by State law (K.S.A. 31-150).

The Kansas Uniform Plumbing code requires the following educational occupancy fixture-to-occupancy ratios:

Educational Occupancy

Boys' Water Closets	Boys' Urinals	Girls' Water Closets
1:50*	1:35**	1:35*

The Uniform Plumbing Code also applies to toilet facilities serving assembly occupancy, e.g., gymnasiums, auditoriums and other noneducational areas. The following outlines the fixture-to-occupancy ratios:

Assembly Occupancy

Mens' Water Closets	Mens' Urinals	Womens' Water Closets
1:100	1:100	1:100
over 300	over 300	over 300
add 1 for	add 1 for	add 1 for
each 500	each 300	each 300

3. Showers

Every school with gymnasiums, organized athletic events or physical education classes should have shower facilities for each sex. Shower heads should be provided in the ratio of 1:5 pupils for the largest single gymnasium or swimming class to be anticipated.

4. Drinking Water Fountains

Sanitary drinking water fountains should be located at strategic locations. No less than one drinking fountain must be provided on each occupied floor. Drinking fountains are prohibited in restrooms by State law (K.S.A. 31-150).

The minimum number of fountains for education occupancies is 1:75. Assembly occupancies is 1:100. Over 200, add 1 per each 200 persons served as indicated in the Uniform Plumbing Code.

5. Service Sinks

Service sinks which have hot and cold water should be provided on each floor convenient to locker rooms, shower rooms, toilet rooms, cafeterias, and kitchens. The water outlet to the service sink should provide a mixture of hot and cold water and be equipped with a hose bib. An approved vacuum breaker should be maintained with each combination faucet.

* Add one water closet in restrooms serving grades K through 6, except in restrooms that serve a single classroom.

** One additional urinal may be substituted for each water closet provided the final number of water closets is not reduced to less than 2/3 the number of the minimum required.

6. Facilities for the Handicapped

The Rehabilitation Act of 1973 requires that handicapped persons not be excluded by reason of their handicap from participation in programs that receive Federal assistance. Consideration should be given to the needs of the handicapped in the use of the sanitary facilities.

Specifications for plumbing and building standards for the handicapped are given in American National Standards Institute document A1171-1980. Kansas requires that plumbing facilities meet the needs of the handicapped (K.S.A. 53-103). Water closets and urinals in toilet rooms should be provided for each sex on each accessible story of school buildings. The toilet rooms should have doors that will provide a minimum clear opening of 32 inches and do not swing into the clear floor space required for any fixture. Clear floor space of 60 inch diameter shall be provided to accommodate turning space for a wheelchair in all accessible toilet rooms.

A drinking fountain or water dispenser should be provided to serve the handicapped on each accessible level of school buildings. Up front spouts and controls for drinking fountains should not be mounted over 36 inches from the floor. The controls of drinking fountains for the handicapped must be hand operated.

CROSS-CONNECTIONS Dishwashers drawn by negative pressure

The potable water supply must never be connected to any fixture or device that could permit contaminated water to be forced or sucked into the potable system. Special attention should be given to ensure that hoses are not connected in laboratories, at service sinks, or elsewhere, or allowed to hang down into wash basins or sinks where contaminated liquids may be contained. Special care must be taken in providing back flow prevention devices for boilers, sinks, toilets, kitchens, showers, pools, cooling systems, laboratories, hose bibs and sprinkler systems. Air gaps should be used whenever possible rather than mechanical devices.

Agencies Providing Codes or Design Standards:

1. American National Standards Institute, Inc. UPC
   1430 Broadway
   New York, New York 10018

2. American Society of Sanitary Engineering
   228 Standard Building
   Cleveland, Ohio 44013

3. American Water Works Association
   6666 W. Quincy Ave.
   Denver, Colorado 80235

4. National Sanitation Foundation
   NSF Building
   Ann Arbor, Michigan 48105

5. National Automatic Merchandising Association, sponsor of
Automatic Merchandising Health Industry Council
7 South Dearborn St.
Chicago, Illinois 60603

6. Cross-Connection Control Manual
E.P.A. - 430/J-73-002
The Office of Water Supply
U.S. E.P.A.
Washington, D.C. 20460

Chapter III

SEWAGE DISPOSAL

GENERAL

All liquid wastes should be handled in a sanitary manner. The same system for disposal of body wastes may be used for disposal of wastewaters generated from other school activities. This system must be watertight, vented outside the building, and connected to all waste collection receptacles (toilets, sinks, etc.) by a water trap that prevents gas exchange within the building. The integrity of this system must be maintained so that there is no possibility of leakage and no direct connections are made between this system and the water supply. School liquid waste disposal may be provided by either an approved public or private system.

PUBLIC SEWER SYSTEM

Community service systems provide school liquid waste disposal through local departments of public works monitored by the Kansas Department of Health and Environment. Changes, repair or replacement of service systems require consultation with these departments. Use of a public disposal system is highly recommended over use of private or on-site systems.

PRIVATE SYSTEMS

Where access to a public sewer system is not possible an alternate means of disposal must be chosen. Early consultation with appropriate regulating agencies is essential.

The three basic ways of alternate waste water disposal are the following: 1) soil application, 2) discharge into surface waters, and 3) non-overflowing lagoons. The soil application and discharge into surface water methods have limitations and require some degree of pretreatment.

A discharge or lagoon system must be permitted by the Kansas Department of Health and Environment. Design of the system by a Kansas professional engineer is required. Each local water and waste water system is required by Kansas statute (K.S.A. 65-4501) to be under the supervision of a Kansas certified operator as noted in Chapter I, "Water Supply."

The purpose of this manual is not to outline design criteria for disposal of wastewater. Investigation of specific county sanitary codes and state regulations through the Kansas Department of Health and Environment is recommended.

Chapter IV

ILLUMINATION

GENERAL

A well-lighted environment conserves eyesight, discourages unsanitary conditions, and may contribute to learning efficiency. In addition, good lighting will help provide a sense of well-being and comfort.

Much has been published on the subject of light - what it is, how it is generated, the mechanics of seeing, and similar information. The material in this chapter pertains to the principles of lighting as applied to vision tasks in schools and ways proper school lighting may be measured and obtained.

Proper lighting embraces two concepts, quantity and quality. An abundance of light may not mean that proper lighting is achieved. A basic principle in lighting science is good light distribution. As in the case of acoustics, the design and application of light fixtures is a highly developed science. Therefore, the services of an illumination engineer or architect experienced in illumination practice will be valuable to assess and make recommendations. Those concerned with school planning and maintenance should be aware of the general facts concerning proper lighting and the methods whereby it may be achieved. The Health Officer or the designated representative using a light meter can tell a great deal about existing light environments and can make recommendations for improvements.

1. Quantity of Illumination

The Illuminating Engineering Society has prepared standards of practice for application to schools. Illumination levels recommended in the Illuminating Engineering Society Lighting Handbook, Fifth Edition, 1972 are shown in Table I (page 12) relative to the types of tasks and needs of specific classrooms.

LIGHTING TERMINOLOGY

There are a few units commonly used in the design and evaluation of illuminated spaces which should be known by inspecting officers or school personnel dealing with these problems. These are as follows:

1. Lumen

The lumen is the unit to measure the amount or quantity of light output from a light source. A light source of one candela (formerly "candle") produces 4π lumens.

2. Footcandle

The footcandle is one unit of illumination. It is a measure of the amount or quantity of light falling on a unit area. If, for example, 1 lumen from a light source falls on 1 square foot of a surface, the illumination would be 1 footcandle. Also, a surface 1 foot from a source with an intensity of 1 candle would have an illumination of 1 footcandle.

3. Footlambert

Footlambert is a measure of luminance (photometric brightness). It measures the amount of light emitted or reflected from a certain area of a surface. A surface emitting 1 lumen per square foot of surface has a luminance of 1 footlambert.

ILLUMINATION REQUIREMENTS

Adequate lighting is determined by both the quantity and the quality of the light. Quantity is the amount of illumination that produces the luminance of the task and surrounding area. Quality pertains to the distribution of luminance in a visual environment and is used in a positive sense to imply that all lights contribute favorably to comfort, safety, and aesthetics as well as ease of seeing.

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Table I

Recommended Illumination

Levels For School Lighting

TASKS	Footcandles Required*
Reading printed material	30+
Reading pencil writing	70+
Spirit duplicated material	
Good	30+
Poor	100+
Drafting, benchwork	100
Lip reading, chalkboards, sewing	150
CLASSROOMS	
Art rooms	70
Drafting rooms	100+
Home economics room	
Sewing	150
Cooking	50
Ironing	50
Sink activities	70
Note-taking activities	70+
Laboratories	100
Lecture room	
Audience rooms	70+
Demonstration area	150
Music rooms	
Simple scores	30+
Advanced scores	70+
Shops	100
Sight-saving rooms	150+
Study Halls	70+
Typing	70+
Corridors and stairways	20
Dormitories	
General	10
Reading books, magazines, newspapers	30+
Study desk	70+

* Minimum on the task at any time for young adults with normal and better than 20/30 corrected vision.
+ Equivalent Sphere Illumination

From Fifth Edition, Lighting Handbook, Illuminating Engineering Society, 1972.

2. Quality of Illumination

Glare: A major detriment to proper lighting is the adverse quality factor known as glare, or large luminance difference. Glare may be defined as high luminance causing fatigue, discomfort, or even interference with a seeing task.

There are several classifications of glare. Two examples are as follows: 1) direct glare due to bright sources of light in the field of vision; 2) reflected glare from bright surfaces such as desk tops, walls, ceilings, floors or windows.

It has been found that the adverse effects of glare are cumulative, meaning that for a short time it may not be annoying but as the subject sits in an area of glare he becomes progressively more fatigued. There are two degrees of glare -- discomfort glare and disability glare. Discomfort glare produces discomfort, eyestrain, headaches, and fatigue but does not necessarily interfere with visual performance or visibility. Disability glare does not cause pain, but reduces the visibility of objects to be seen.

A basic rule for avoiding glare and also areas of shadow in a lighted room is that the lighting should be diffuse, i.e., it should come from many directions. A single spot source causes both glare and shadows. It should be remembered, however, that special seeing tasks such as those in a shop or at a drafting board may require an individual directional source of light at the point where the work is performed. The effects of glare can also be avoided or minimized by mounting luminaries as far above or away form normal lines of sight as possible, and by limiting their luminance and quantity of light emitted toward the eyes.

LIGHT SOURCES

Daylight and electric light are the two main sources of light. The use of daylight should be encouraged because of the saving in energy and also to obtain benefit of its wide spectrum. The recommended window-glass area of a classroom is usually 15 to 20 percent of the floor area.

Because adequate daylight is not always available, some means for artificial lighting should be installed in every classroom. It is important that areas of sharp shadows be avoided in placing light sources and the uniform levels of illumination be achieved. Where light sources are placed too far apart, a person working midway between them will be in an area of insufficient illumination. Installation of an additional light fixture eliminates this difficulty.

Types of artificial light which may be utilized in school buildings are incandescent and fluorescent. Fluorescent light, in general, is more economical since a minimum of energy is wasted as heat and most of the electric energy supplied to the lighting fixture is utilized as light. Although the initial cost of installation may be higher than for incandescent fixtures, operation and electrical costs are often lower.

When artificial lighting is used, the type of luminaries chosen should be based on the quantity and quality requirements of the space. A luminaire is a complete lighting device consisting of one or more lamps together with parts to distribute the light, to position and protect the lamps, and to connect the lamps

to the power supply. Artificial lighting systems are classified into five types according to their light distribution. These are shown in Table 2.

Table 2 Classification of Artificial Lighting Arrangement

Type of System	Percent of Light Directed Upward	Percent of Light Directed Downward
Indirect	90-100	10-0
Semi-indirect	60- 90	40-10
General diffuse	40- 60	60-40
Semi-direct	10- 40	90-60
Direct	0- 10	100-90

In achieving these distributions, three basic principles are employed. These are absorption, diffusion, and reflection. Absorption may be illustrated by placing a light source behind a piece of brown paper. A dull glow on the side of the paper away from the light source indicates that little of the light has passed through, but most of it is absorbed by the material of the paper. Objects behind the paper are not seen. The principle of diffusion is illustrated by a piece of translucent glass. This allows much light to pass through, but objects on the other side cannot be recognized clearly. When light strikes a surface, a part of this light is thrown back into the original medium. This is called reflection. If the surface is smooth, reflection is regular, otherwise it is diffuse. A transparent piece of glass reflects very little, while a mirror reflects almost 100 percent.

Although the indirect types in Table 2 are less efficient, they produce more comfortable lighting than the more efficient direct types. Because direct types may produce disturbing shadows and glare, they should be confined to storage areas or spot applications.

The general diffuse lighting is also known as "direct-indirect lighting." For diffuse light distribution, the indirect installation is effective because ceiling or wall surfaces act as the light source. Shadows are minimized and glare is controlled. Where such an installation is provided, ceilings should be of a light color, white, or near white. Ceilings should also have a flat finish to control direct reflections or image reflections of the lamp. In general, diffuse lighting is more even because more light is absorbed by the room surfaces before it reaches the working place.

LIGHTING SURVEY

A lighting survey can be simple or comprehensive. A light meter provides a simple method of measuring light. It operates by means of a photoelectric cell, which causes a small electric current when struck by direct or indirect light. The current is connected to a micro-ammeter for direct reading of illumination in foot candles.

One of the sources of error in an inexpensive light meter is that it does not respond to colored light as does the human eye, and it is most sensitive to light reaching the plane of the photoelectric cell from a perpendicular direction. To account for the response of the eye to light and to compensate for light reflected from the light-detecting cell surface, a light meter should be "color corrected" and "cosine corrected."

Ordinary light meters may be used to determine approximate luminance. For reflecting surfaces, the cover plate should be held directly against the surface, then slowly drawn back a few inches. Luminance in footlamberts is the reading in foot candles.

To estimate the reflectance of a surface, the illumination and luminance are first determined. The ratio of luminance in footlamberts and the illumination in foot candles is the reflectance.

Chapter V

THERMAL ENVIRONMENT

GENERAL

Proper temperature, humidity, and ventilation contribute to a healthful and comfortable environment.

The concept of the thermal environment embraces the functions of air heating, cooling, humidity control, and air distribution. Distribution in turn implies the delivery of fresh air and the removal of used air. These functions in a school environment are important in achieving student and staff comfort, efficiency, and health. An air conditioning system that is properly designed, controlled, and operated can produce conditions that impede the spread of respiratory infections.

CLASSROOM TEMPERATURE LEVELS

Satisfactory temperature recommendations for various types of classrooms cover a range of 68°F to 74°F during winter months and 74°F to 89°F during summer months. Although not mandatory, it is recommended that students be dismissed until appropriate adjustments can be achieved when temperatures are below 60°F or above 90°F and are not able to be regulated to a more comfortable range.

Study has shown that children are generally more comfortable if temperatures are somewhat cooler than those considered ideal by adults. When students in the classroom are moderately active, the lower limit mentioned above is desirable; when they are less active, the higher limit may be more comfortable. A temperature of 65°F or slightly lower is recommended in gymnasiums, except higher temperatures are needed in locker and shower rooms (75°F-80°F) and pool areas (83°F).

VENTILATION

Ventilation may be accomplished by natural or by mechanical means. Fresh outdoor air is introduced into the air system of the building to provide a basic minimum quantity of air necessary for healthful respiration by the occupants.

Special consideration should be given to ventilation requirements for areas where activities such as welding, foundry, forging, heat treating, machining cast iron, machine woodworking, auto mechanics, plastics forming and grinding, chlorination of swimming pools, electroplating, etching, painting, and the making of blueprints are carried out. For many of the above operations, specially designed hoods are required.

In the chemical laboratory, exhaust ventilation that removes airborne contaminants at the site of generation is preferred. General dilution ventilation may be used when the concentrations of chemicals in the air are below the level that will cause injury or illness. Completely enclosed hoods requiring gloves for entry should be used for highly toxic chemicals.

Further information concerning ventilation systems specifically designed to handle certain types of contaminants are described in the Kansas Safety Education Handbook, Volume III; p.1663-1680 published by the Kansas Department of Education in cooperation with the Wichita Public Schools, 1981.

HUMIDIFICATION AND DEHUMIDIFICATION

The control of humidity at times requires humidification (adding moisture to the air) and at other times dehumidification (removing moisture from the air). Drying out of the nasal mucous membranes may increase the susceptibility of students to respiratory infection. Humidification of the air under these conditions is desirable to a level of 30% relative humidity, although actual limits may be imposed by the formation of ice on the windows during the winter months. Some degree of dehumidification is inherent when any air cooling system is used. However, the removal of latent heat (the condensation of moisture in the air) is more expensive to accomplish than is the removal of sensible heat. Therefore, most air cooling equipment is designed to remove as much sensible heat as possible.

CHAPTER VI

ACOUSTICS

GENERAL

Excessive sound levels have a variety of effects on people. An important physiological effect is permanent hearing impairment. In educational facilities, the main effects are interference with communication and disturbance and annoyance due to noise (unwanted sound). It has been shown that noise has a serious effect on student attention and concentration, causing students to make more mistakes and to work less efficiently.

NOISE LEVELS IN SCHOOLS

Typical noise levels in a school originating from both internal and external sources are given in the Table below. It is shown that continuous exposure to noise above the 80 db can cause hearing loss (the American Conference of Governmental Industrial Hygienists recommends an upper limit of 85 db for 8 hours exposure).

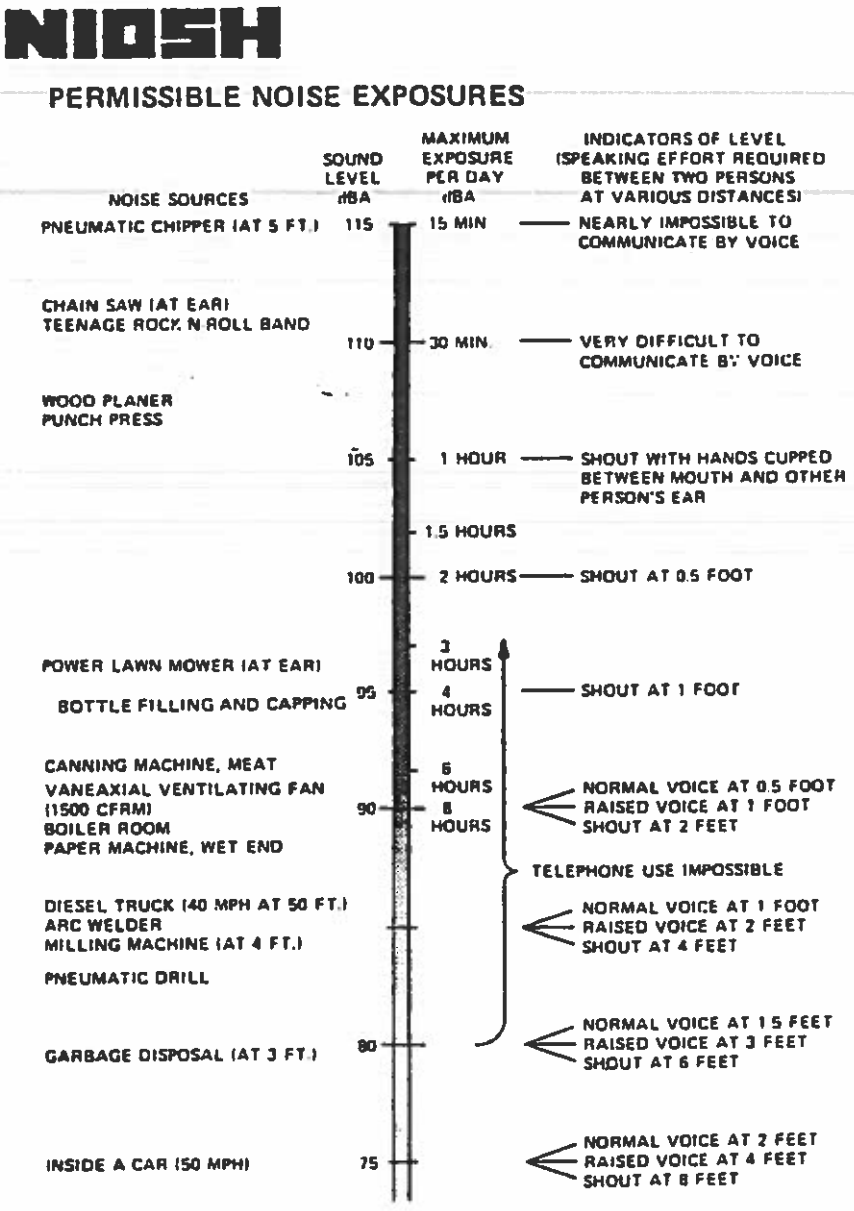
CONTROL OF NOISE

Two practical means of control are (1) reduction of noise at its source such as making the sound-producer more quiet and (2) alteration of the sound path by distance or by shielding.

Excessive noise is one of the most commonly violated standards and can cause permanent hearing damage. To protect pupils, teachers and employees it is administration's responsibility to make sure exposure to noise levels does not exceed established standards. The National Institute of Occupational Safety and Health (NIOSH), gives estimates of noise levels and the maximum allowable exposure times. There are many forms and types of ear protection that can be considered--from ear muffs to ear plugs. It is necessary to provide protection that is effective and reasonably comfortable to the wearer.

Evaluation of student and staff's hearing prior to assignment into areas having high noise levels should be made. Follow-up periodic audiograms should be rechecked. If any change is noted, the person should be removed from a high noise area. A hearing loss is considered permanent if it persists in the person removal from the high noise area six months.

Permissible Noise Exposure Chart



Chapter VII

ARTHROPOD AND RODENT CONTROL

PUBLIC HEALTH RATIONALE

A substantial number of human diseases are transmitted or caused by arthropods and rodents. The damage by insects and rodents to school property each year amounts to millions of dollars. Their presence may also indicate the existence of serious environmental deficiencies.

GENERAL

The complex structure of modern schools makes it highly unlikely that all potential harborage places for arthropods and rodents can be eliminated or that access can be denied permanently. However, it is possible to maintain a school plant and premises in such a condition that populations of arthropods and rodents can be maintained at low levels. There are three fundamental methods for achieving this control: (1) good sanitation throughout the school premises, (2) the proper use of insecticides and rodenticides, and (3) structural measures. The third measure includes the general maintenance and care of buildings and prompt repair of cracks which appear in exterior or interior walls, thus denying access to arthropods and rodents.

BASIC SANITATION

The best means of preventing an infestation is to maintain good sanitary standards throughout the school plant and premises. Areas especially favorable to arthropod and rodent populations are cafeterias, lunchrooms, kitchens, toilets, washrooms, basements, storage rooms, and locker rooms. Students should continuously be instructed on the importance of keeping their locker clean, free of food and soiled clothing.

Basement areas where fuel supplies and tools are stored, and where the heating system is located, are natural places for arthropods and rodent harborage. The custodian's operations should be checked at regular intervals to ensure that basement rooms are kept free of litter. An important aid to maintaining sanitary conditions throughout the school plant is the provision of good lighting.

The kitchen and dining room areas present special problems in arthropod and rodent control. Food should be stored in containers with tight-fitting lids. After each meal, the entire kitchen area should be thoroughly cleaned. Proper handling and storage of garbage is mandatory. The food preparation facilities must be inspected and licensed by December 31 of each year.

Washrooms and shower rooms should be thoroughly cleaned to remove accumulations of dirt, particularly in the corners. Areas under lockers should be swept frequently or vacuumed.

No deposits of trash, brush, wood or other material which may provide harborage for rodents should be allowed to accumulate on the premises outside the school building

Garbage spilled on the ground can be a source of fly production and should be avoided. The eggs of domestic flies hatch in 12 to 24 hours, and the three larval stages usually last from 4 to 7 days in warm weather. To prevent migration of fly larvae from garbage cans and bulk containers to pupae in the ground or under debris, refuse should be removed from the premises frequently.

Standing water, both surface water and that collected in artificial water holding containers, is conducive to mosquito breeding and should be drained or otherwise protected to prevent this problem.

PESTICIDES

Pesticides such as insecticides and rodenticides should be considered an ancillary aid to the control of arthropods and rodents. Persons who use pesticides should be aware of the major provisions of the Federal Environmental Pesticide Control Act of 1972 and its amendments. The Act specifies that pesticides must be classified for "general" use or "restricted" use. Those placed in the restricted category may be used only by, or under the supervision of, certified applicators. Standards for Federal certification of pesticide applicators have been established. To be certified, an individual must demonstrate that he is competent in the use and handling of pesticides.

The Act also states that the use of any registered pesticide in a manner inconsistent with labeling instructions is prohibited. Label directions and precautions on all pesticide products registered for sale are designed to prevent injury to man and the environment. Additional information may be obtained by contacting local and state health departments and the state agriculture department.

Arthropods sometimes encountered in the school or on school premises include flies, cockroaches, ticks, lice, and mites. Mosquitoes and ants may occasionally become a problem in some areas.

The housefly, Musca domestica, is the domestic fly most commonly encountered in the school environment. The breeding sites of these flies include animal wastes, refuse, and other organic debris so that control with chemicals is effective only when combined with proper sanitation measures. The housefly has become resistant to many of the organochlorine and organophosphorus compounds formerly used in its control. Such resistant populations also are frequently less responsive to carbonate and pyrethrum-type materials. The resulting reduction in choice of effective chemicals accent the fundamental necessity of improving environmental sanitation as the primary control means.

Because cockroaches frequent areas where food is prepared or served, precautionary measures must be taken during the insecticide treatment to avoid contamination of food or food preparation surfaces. In treating the school cafeteria with a residual insecticide, the toxicant should be applied as a spot treatment. The spot spray should be used to treat baseboards, cabinets along water pipes, under refrigerators, behind stoves, and other cockroach harborages. To obtain a quick kill in heavy infestations or to drive the insects from protected areas, a pyrethrum aerosol should be used just prior to the residual treatment.

Dust applications offer an advantage over liquid treatment in that they give better penetration of enclosed areas, such as beneath cabinets and in wall voids. Their use in visible areas is normally precluded because of their unsightly appearance. The drift qualities of dusts enable them to be used in any area that is difficult to spray. A disadvantage, however, is that cockroaches tend to avoid dust deposits. Certain dusts containing fluoridated silica aerogels are reported to act as a desiccant as well as a repellent to cockroaches.

Ticks may be encountered in wooded areas on or near school premises during some seasons of the year. Control of stray dogs on school premises will reduce the likelihood of infestations of the brown dog tick. Five-foot-wide band treatments around foundations may prevent ticks from entering. Area control can be obtained by applying suspensions, emulsions, or dust formulations of appropriate pesticides. Great care must be taken to avoid contamination of waterways if area control methods are utilized for tick control.

Scabies, or "the itch" as it is commonly called, has been reported among school children in many states in recent years. The disease, caused by a microscopic mite, is spread by transfer of the adult mite from an infected individual to another person. Mites are usually passed by close personal contact; transmission in fomites (towels or clothes) is frequent. Spread within households is much more frequent than in classrooms or offices. The first symptom of scabies is itching over much of the body, especially at night.

If scabies is diagnosed, the affected individual and his or her household contacts should be treated. Affected individuals should be referred to a physician. Bed linen and clothes can be disinfected by normal laundering in hot water. An appropriate chemical spray may be used for treating other potential fomites not amenable to laundering. Current recommendations for treatment should be obtained from health authorities.

In the United States, problems with head lice have occurred frequently in recent years among school children. Head lice are transmitted through direct contact with an infested person and indirectly by contact with their personal belongings, especially clothing, combs and headgear. Although commercial shampoo and lotion preparations are available for treatment, medical or health department personnel should be contacted for appropriate recommendations. Important preventive measures involve laundering of clothing in hot water (140°F. for 20 minutes) or dry cleaning to destroy nits and lice, frequent changes to properly laundered clothing, and personal cleanliness.

Successful rodent control can be achieved only by diligently practicing proper food storage, refuse storage, collection and disposal, harborage elimination, and ratproofing. The use of traps and rodenticides, either alone or in combinations, are supplemental to and not a substitute for effective sanitation.

Trapping is the least efficient method, because it eliminates only a small percentage of the total rodent population. Trapping does prevent odor problems that may occur if a poisoned animal dies within walls, floors, or ceilings.

Rodenticides fall into two categories: the single-dose type which is fatal to the rat through a single feeding (e.g., zinc phosphide, red squill) and the multiple-dose type which requires repetitive feedings to be effective (e.g., warfarin, diphacinone). The latter type has dominated the field of rodent

control for more than a decade. These slow-acting rodenticides are used in most situations because of their effectiveness and low risk to humans and domestic animals.

Multiple-dose anticoagulant rodenticides can be used as a liquid or dry bait. Dependable control of the Norway rat and the roof rat generally can be accomplished with these rodenticides. Because of the discovery of widespread resistance, it is apparent that present practices of relying continually on anticoagulant baits in rodent control should be modified. One approach is to place greater emphasis on good sanitation practices and to use the anticoagulants only when needed.

The single-dose rodenticides are especially useful for the rapid reduction of large populations of rodents. This type generally requires fewer man-hours to apply and less bait material. Most single-dose rodenticides should not be used in a school because of high toxicity and higher than average risk of exposure. Appropriate health authorities should be consulted for recommendations concerning use.

Control of mice sometimes can be accomplished by the use of anticoagulant baits. Because mice do not forage widely, the use of many well distributed small baits is preferable to a few large ones.

When rodenticides are used, a chart should be prepared to show the exact location of the baits. This route should be checked at regular intervals after application to replenish the baits and to remove any dead rodents near the bait station. The baits must be located in areas not easily accessible to students.

STRUCTURAL METHODS

Arthropods and rodents should be denied entrance to a school plant by closing unnecessary access openings. All new buildings should be required to be of rodent-proof construction. Existing buildings should employ necessary rat stoppage techniques to block all passages by which rodents are likely to enter or exit the building. It is possible to achieve rodent stoppage in a variety of ways, such as covering air spaces with hardware cloth, sealing cracks and holes with concrete or metal, constructing concrete curtain walls or using a combination of these. Reference for details should be obtained by consulting local and state public health agencies.

It is most important in the structural method of arthropod and rodent control that the school plant be kept in good repair. When cracks appear in walls, they should be promptly closed and damage to screening should be repaired. Hard surface cover of crawl spaces with a thin concrete slab will help prevent the entrance of rodents. Rat-proof floors are recommended in food preparation and storage areas.

Chapter VIII

GENERAL HOUSEKEEPING AND MAINTENANCE

GENERAL

Modern housekeeping is a science which goes beyond mopping or sweeping of rooms, although these procedures are still an essential part of the program. The person who is in charge of housekeeping or custodial care should be carefully selected. The usefulness of a housekeeper in the school system will be enhanced if the position is recognized as one of importance and includes a salary commensurate with the product which is anticipated.

Arrangements should be made to provide in-service training for housekeepers, which can in part be accomplished by visits to other schools. It is also desirable that the custodian participate in training that may be given by a state college, university, vo-tech school or chemical company. This individual should also have access to suitable periodicals which will provide up-to-date information on house cleaning methods and materials.

SCHOOL ADMINISTRATION'S RESPONSIBILITY

1. Insure that plans for all new construction include adequate, properly lighted and ventilated areas for custodial supplies, including cleaning materials and equipment.

2. Written job descriptions should be developed for custodians and housekeepers.

3. Develop, with custodial staff, a written cleaning and maintenance schedule.

4. Provide the necessary cleaning supplies and equipment for custodial staff.

5. Supervise the custodial operation, insuring that proper cleaning and maintenance are performed according to prepared schedules.

6. Insure that custodial maintenance staff have adequate knowledge and skill to carry out all assigned duties.

DUTIES OF CUSTODIAL STAFF

1. Maintain an environment conducive to the general safety, health, and comfort of teachers and students.

2. Maintain grounds in a clean, safe, attractive manner.

3. Maintain cleanliness of the building, facilities, and equipment.

4. Promote fire safety through preventive actions.

5. Operate the service systems, including the lighting, heating, cooling, ventilating, water, sewage systems, and solid waste management in a proper manner.

6. Order, inventory, and insure proper storage of cleaning and maintenance supplies and equipment.

7. Develop, with administration staff, cleaning and maintenance schedules and review these schedules periodically.

8. Maintain all records pertaining to custodial duties and report as required.

CLEANING SCHEDULE (WRITTEN)

No single cleaning schedule will be appropriate for all schools. Particular cleaning jobs need to be done daily, weekly, monthly, or occasionally. Appropriate procedures should be outlined for each school. Schedules should allow for non-routine and unexpected work that may be required.

HOUSEKEEPING PROCEDURES

Directions and procedures for all cleaning should be written and should include:

1. Proper use of cleaning tools and equipment.

2. Proper use of cleaning compounds. Note: Read labels and follow directions of manufacturer for all products.

3. Care of tools and equipment such as cleaning and drying mops, cloth, and brushes; and the preventive maintenance on equipment as per manufacturer's instructions.

Chapter IX

HANDICAP PROVISIONS

GENERAL

Many design and construction features of sites, buildings and facilities cause problems for people with physical impairments. These architectural barriers make it difficult for people with physical impairments to participate in normal educational, recreational, social and employment endeavors.

The Kansas Legislature, recognizing the needs of handicapped persons, enacted K.S.A. 72-4604 in 1968 which mandated that "the construction of school buildings shall include reasonable provision for making buildings and facilities accessible to, and usable by, the physically handicapped".

In 1978, the Kansas legislature enacted K.S.A. 58-1301 which amended the original Act to include all public and governmental buildings (as defined in K.S.A. 58-1310) and to include, as minimum standards, the requirements of the American National Standards Institute (ANSI) specifications A 117.1. It is the intent of the legislature to make all buildings and facilities covered by this act accessible to, and functional for, the physically handicapped.

Section 504 of Public Law 93-112 requires that all public school districts receiving federal funds provide total accessibility to any handicapped student, teacher or parent to all programs offered by the school district.

REQUIREMENTS

The following statements are examples of those which are acceptable to achieve the requirements of the American National Standard Institute to accommodate the handicapped, ANSI A117.1 1980. These are not the absolute minimum requirements but they, or an equivalent, will conform to the mandatory and recommended expectations for public and private schools in Kansas according to state law and federal guidelines for section 504 of public law 93-112. Reference to the original document is advised for full explanation of the standard.

1. Parking

An appropriate number, (not less than one) parking space(s) shall be provided for the handicapped (K.S.A. 1978 Supp. 58-1311).

Each space shall be:

1.1 Not less than 13 feet wide;
1.2 On a smooth, firm surface;
1.3 Clearly marked and reserved for handicapped;
1.4 Located to minimize travel distance and traffic hazard;
1.5 Accessible from sidewalks and entrance locations;

Note: Handicapped parking became mandatory January 1, 1979, for new and existing tax-funded schools. (K.S.A. 1978 Supp. 58-1311.) Parking space is recommended at privately owned facilities which receive no tax aid.

2. Access

2.1 Buildings and facilities used by the public are intended to be accessible to and functional for the physically handicapped without loss of function, space, or facility. Administrative authorities may permit the use of alternative methods or materials when it is clearly evident that equivalent facilitation and protection are thereby secured (K.S.A. 58-1303).

2.2 At least one accessible route shall be provided from public transportation stops, accessible parking, and passenger landing zones, and public streets or sidewalks to an accessible entrance to every school building, including all accessory buildings, facilities, elements and spaces that are on the same site.

2.3 Stairs shall not be permitted as part of an accessible route.

2.4 Exterior walks shall have a slope not exceeding 1:20.

2.5 Ground, walk, ramp, and floor surfaces allowing accessible routes shall be relatively non-slip under all weather conditions and shall comply with ANSI 4.5.

2.6 If gratings are located in walking surfaces, they shall have spaces no greater than ½ inch with an elongated opening perpendicular to the direction of travel.

2.7 The international symbol of accessibility shall be displayed at major entrances. If only one entrance is accessible, signs at other major entrances will direct persons to the accessible entrance (K.S.A. 58-1306).

2.8 Tactile warnings shall be provided at hazardous conditions, as specified.

3. Entrance

3.1 Entrance landings shall extend at least 2 feet wider on the latch side of the door and shall extend at least 5 feet from the face of a door which swings over it.

3.2 Entrance landings shall extend at least 2 feet wider on the latch side of the door and shall extend at least 4 feet from the face of a door which swings away from it.

3.3 Entrance thresholds shall not exceed ½ inch.

3.4 Entrance doors, including at least one leaf of double doors, shall afford a clear opening of not less than 32 inches. (A nominal 2 foot 8 inch door will not meet this requirement.)

3.5 The minimum space between two hinged or pivoted doors in series shall be 48 inches plus the width of any door swinging into the space.

3.6 A service entrance shall not be the sole accessible entrance unless it is the only entrance to a building or facility.

4. Interior Circulation and Access

4.1 The minimum clear width for single wheelchair passage shall be 32 inches at a point and 36 inches continuously.

4.2 The minimum width for two wheelchairs to pass is 60 inches.

4.3 The space required for a wheelchair to make a 180-degree turn is a clear space of 60 inch diameter.

4.4 Interior or exterior passage doors shall meet the requirements for 32 inch clear opening width.

4.5. Interior door openings shall have a side clearance of 24 inches from a parallel wall or obstruction from the strike jam at the door when the door swings toward the direction of approach.

4.6 Interior door openings shall have a side clearance of 12 inches from a parallel wall or obstruction from the strike jam of the door when the door swings away from the direction of approach.

4.7 Interior doors shall have a level landing which extends at least 5 feet from the face of a door which swings over it.

4.8 Interior doors shall have a level landing which extends at least 4 feet from the face of a door which swings away from it.

4.9 Interior doorsills shall be flush if possible. Thresholds required for fire doors of 3/4 hour or greater fire resistive rating shall not exceed ½ inch in height.

4.10 Floors shall have a non-slip surface. Carpets, if used on a floor surface shall be of level loop, level cut pile or level cut/uncut pile texture. The maximum height of pile shall not exceed ½ inch.

5. Interior Stairs (Buildings not equipped with elevators)

5.1 On any given flight of stairs, all steps shall have uniform riser heights and uniform tread widths. Stair treads shall be no less than 11 inches wide measured from riser to riser.

5.2 Tread nosings shall be rounded or sloped and shall not project more than 1½ inches.

5.3 Handrailings shall be installed on both sides of stairways and shall be not less than 30 inches nor more than 34 inches above the nosing.

5.4 If handrails are not continuous, they shall extend at least 12 inches beyond the top riser and at least 12 inches plus the width of one tread beyond the bottom riser.

6. Ramps

6.1 Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp. (Except for aisles in an assembly room with fixed seats.)

6.2 Ramps shall have a slope not exceeding a ratio of 1:12 for new construction. The maximum rise for any ramp run shall be 30 inches.

6.3 The minimum landing for any ramp shall be 60 inches.

6.4 The minimum clear width of all ramps shall be 36 inches.

6.5 Ramps that have a clear running rise greater than 6 inches or a horizontal projection greater than 72 inches, shall be equipped with handrails on both sides that are not less than 30 inches or more than 34 inches high.

7. Drinking Fountain

7.1 At least one drinking fountain or water dispenser to service the handicapped shall be provided on each accessible level.

7.2 Drinking fountains for the handicapped shall have spouts which are mounted not over 36 inches above the floor.

7.3 Drinking fountains for the handicapped shall have up-front spouts and controls.

7.4 Drinking fountains for the handicapped shall have controls which are hand operated.

8. Food Service

8.1 Food service facilities for serving, dining, or dish return (if provided) shall be usable by the handicapped.

9. Assembly

9.1 Rooms or facilities for assembly (if provided) shall have seating and circulation to accommodate the handicapped.

9.2 Stages or platforms (if provided) shall be accessible to the handicapped.

9.3 Dressing rooms used in conjunction with stages, platforms, or rooms of assembly shall be accessible to the handicapped.

10. Elevators and Platform Lifts

10.1 If elevators are used as the means to provide accessibility to different levels or stories of a building, the elevator shall be on an accessible route and shall comply with all requirements of the American National Standard Safety Code for elevators, ANSI A17.1 This standard does not preclude the use of residential or fully enclosed wheelchair lifts which meet all safety requirements of the administrative authorities.

10.2 If elevators are used in school buildings as the only accessible means of access to, or emergency egress from, accessible stories or levels, then at least one elevator shall be restricted and controlled for the handicapped. This elevator shall not be equipped with the automatic recall "Fireman Control" device. This provision has the approval of the Kansas State Fire Marshal's Office.

10.3 Platform lifts, which comply with all requirements of 4.2.4., 4.5, 4.25, and all safety requirements, may be used as a part of an accessible route if no other alternative is feasible.

11. Toilet Rooms

11.1 One accessible toilet shall be provided for each sex on each accessible story of school buildings.

11.2 All doors to accessible toilet rooms shall have a minimum clear opening of 32 inches and shall comply with all requirements of 4.13. Doors shall not swing into the clear floor space required for any fixture.

11.3 A clear floor space which can accommodate the 60 inch diameter unobstructed turning space for a wheelchair shall be provided in all accessible toilet rooms.

11.4 All accessible toilet rooms shall be equipped with at least one fixture and accessories such as paper dispensers, soap dish, mirrors, etc.

12. Environmental Controls

12.1 Controls and operating mechanisms in accessible spaces, along accessible routes, or as part of accessible elements, shall be mounted not more than 48 inches above the floor and shall be accessible to persons in a wheelchair.

12.2 Controls and operating mechanisms which are locked or totally secured to permit operation exclusively by authorized maintenance personnel need not comply with the above mounting height.

12.3 Electrical and communication system receptacles on walls shall be mounted not less than 15 inches above the floor.

13. Hardware

13.1 Door handles, pulls, latches, locks and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever-operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs.

13.2 If doors are equipped with closing devices, the closing device shall comply with ANSI A117.1-4.13 and 4.13.11.

13.3 Doors that lead to areas that might prove dangerous to a visually impaired person (for example, doors to boiler and mechanical equipment, rooms, swimming pools, stages, gymnasium seating, and the like) shall be made identifiable to the touch by a textured surface on the door handle, knob, pull or other operating hardware. Doors that are permanently locked and are equipped with non-operable hardware that require a key to operate are not required to be so equipped.

Chapter X

ASBESTOS

PUBLIC HEALTH RATIONALE

Excessive occupational exposure to asbestos was initially associated with a chronic and debilitating lung disease called asbestosis. More recently exposure to asbestos has been associated with lung cancer, a rare cancer of the chest and abdominal lining called mesothelioma, and cancers of the esophagus, stomach, colon, and other organs. Asbestos also acts as a potent cancer-causing agent in combination with cigarette smoking. In all asbestos-related diseases there is a latency or induction period of many years between initial exposure and appearance of the disease.

In most cases asbestosis has followed long exposure to high levels of asbestos fibers. Therefore, asbestosis is not as significant a concern in schools as cancer risk. The potential for increasing cancer risk may exist at much lower and shorter exposures than those for asbestosis.

In addition to the general interest in eliminating unnecessary asbestos exposures whenever possible, school-related exposures are also of special concern. The school child population differs from their occupational populations in age, population density, and behavior. The exposure of children and adolescents to asbestos in the school building occurs early in their life span. Their remaining life expectancy provides a long development period for asbestos-related diseases.

Second, a large number of students can be exposed at one time to asbestos that is released from asbestos-containing materials present in the school building. The duration of exposure is of concern since school children attend school daily for most of the year.

Finally, the school population is very active. Certain asbestos-containing materials can be damaged during school activities and as a result of the capricious behavior of students. Other materials can be damaged, asbestos fibers are released and exposure can occur. Many cases of badly damaged asbestos-containing materials have been found in schools.

GENERAL

Construction materials containing asbestos have been used extensively in schools and other buildings. The concern about exposure to asbestos in these buildings is based on evidence linking various respiratory diseases with occupational exposure in the shipbuilding, mining, milling and fabricating industries. The presence of asbestos in a building does not mean that the health of building occupants is endangered. If asbestos-containing material remains in good condition and is unlikely to be disturbed, exposure will be negligible. However, when asbestos-containing materials are damaged or disturbed - for example, by maintenance or repairs conducted without proper controls - asbestos fibers are released. These fibers can create a potential exposure hazard for building occupants.

Asbestos may be found in cement products, acoustical plaster, fireproofing textiles, wallboard, ceiling tiles, vinyl floor tiles, thermal insulation and other materials. Asbestos-containing materials have been grouped into three categories: (1) sprayed or trolled-on materials on ceiling, walls and other surfaces; (2) insulation on pipes, boilers, tanks, ducts and other equipment; and (3) other miscellaneous non-friable products. Materials in the first two categories can be friable, that is, they can be crumbled, pulverized or reduced to powder by hand pressure.

Friable materials are more likely than non-friable materials to release fibers when disturbed or damaged. Examples of non-friable asbestos-containing materials are vinyl-asbestos floor tile, asbestos-cement products and ceiling tiles. Although non-friable materials are of less immediate concern, they should not be totally ignored. Fibers will be released if nonfriable material is cut, drilled, sanded or broken during building repairs or renovation.

ASBESTOS REGULATIONS

Federal EPA, and OSHA and the State of Kansas have published regulations and passed laws to reduce asbestos exposure. EPA regulations focus on: (1) application and removal of asbestos-containing materials in new or remodeled building, and (2) identification of asbestos in schools. EPA also regulates the industrial emission of asbestos fibers and the disposal of asbestos waste. OSHA addresses worker protection in the workplace.

The first EPA regulations were issued in 1973 as National Emission Standards for Hazardous Air Pollutants (NESHAPS), as authorized by the Clean Air Act. The first regulations were directed largely at the asbestos industries, but also partially banned spray-applied asbestos-containing materials in new buildings, and established procedures for handling asbestos-containing materials during demolition. The regulations were revised in 1975 and 1978 to cover building renovations, the use of all types of insulating asbestos-containing materials in new buildings, and asbestos emissions from waste disposal. Of particular interest to the owners of buildings containing asbestos are the following regulations:

When a building is demolished - or more than 260 linear feet of asbestos pipe insulation or 160 sq. ft. of asbestos surfacing material are removed during renovation - advance notice must be filed with the EPA regional office giving:

1. name and address of the building owner or manager;
2. description and location of the building;
3. scheduled starting and completion dates of asbestos removal;
4. description of the planned removal methods; and
5. name, address and location of disposal site.

Asbestos can be removed only with wet removal techniques. Dry removal is allowed only under special conditions and only with written EPA approval.

No visible emissions of dust are allowed during removal, transportation and disposal of asbestos-containing materials.

The most recently enacted set of EPA regulations apply directly to school buildings and are found in Part III, 40 CFR Part 763. These regulations were adopted under the Asbestos Hazard Emergency Response Act (Public Law 99-579) of 1986. Known as AHERA, this law requires all primary and secondary schools (Grades K-12), both public and private, to:

1. inspect, sample and analyze building materials for asbestos using accredited persons;

2. prepare and submit comprehensive management plans that outline the school's program to manage any asbestos materials that were identified in their buildings;

3. inform all school employees and the school's parent-teacher organization or parents, if there is no organized group, of the availability of the plan;

4. establish a program of reinspection and periodic surveillance of buildings that contain asbestos materials.

The OSHA regulations were first issued in 1972 and modified in 1976 and, most recently, in 1987. They specify airborne exposure standards for asbestos workers, engineering and administrative controls, workplace practices, medical surveillance programs and other worker protection requirements. The OSHA regulations apply to all workplace activities involving asbestos, including removal of asbestos from buildings. The OSHA regulations that include standards for asbestos removal operations are promulgated as a construction industry requirement.

OSHA's worker exposure standards are not appropriate for application in all settings. First, the standards were set to protect workers from more severe exposure conditions than the general public exposures typical in buildings with asbestos-containing materials. Second, the measurement techniques that determines OSHA compliance does not distinguish between asbestos and nonasbestos fibers and does not measure the small asbestos fibers typically found in buildings with asbestos-containing materials. The measurement problem is not a major shortcoming in industrial setting where most airborne fibers are expected to be asbestos. However, a smaller number of fibers in general building air are asbestos, and the OSHA measurements may be misleading.

The 1985 Kansas Legislature also passed two significant laws related to asbestos in public buildings (including schools). The first of these laws provides authority for municipalities to issue and sell general obligation bonds for the payment of costs associated with the removal or encapsulation of problem asbestos-containing materials. The second law provides for the development in Kansas of a comprehensive asbestos abatement contractor licensing and asbestos employee certification program to insure that qualified firms and well-trained individuals are available to perform asbestos abatement work. The Kansas Department of Health and Environment has been given the responsibility for implementing this latter law and additional information pertaining to the detailed requirements of the law can be obtained from that agency.

Chapter XI

PLAYGROUND SAFETY

GENERAL

Over the past few years school administrators and personnel have been subject to considerable court proceedings relative to issues of negligence for injuries that have occurred on school playgrounds. This increase has been brought about by an awareness that school playgrounds are in many instances both archaic in their design of equipment and extremely unsafe as it relates to maintenance and upkeep of equipment. The intent of this section is to provide a brief review of issues surrounding playground safety. There are several significant points that all school administrators and personnel need to address when reviewing playground equipment and the policies designed to provide for safe play by children.

EQUIPMENT

It is important that the Consumer Product Safety Standards (CPSS) be reviewed when planning additional items of playground equipment or in relocating playgrounds. The use of merry-go-rounds, teeter-totters, or passive playground apparatus such as slides, should be reviewed for their value in promoting creative play for young children.

MAINTENANCE

A periodic maintenance schedule should be established for playground equipment to eliminate potential hazards occurring from broken or poorly constructed equipment. Items that are constructed of gray galvanized pipe should be painted with concern for high visibility colors such as fluorescent orange or bright green. This is imperative when students are using equipment in the close confines of areas where ball games may take place.

PLAYGROUND SAFETY ADMINISTRATION

School attendance centers should establish specific guidelines that do not inhibit or restrict creative play and are designed to foster the use of equipment. Fences around playgrounds are not required but do serve as barriers to keep children from the street. Guidelines should be available for the benefit of children rather than the comfort of staff.

PLAYGROUND PLANNING

Districts should make periodic evaluations of school district playgrounds involving the physical education staff, community resource personnel, faculty and parents. Often a playground serves a community as well as a building or area student body. It is important that the needs or the use of the playground be thoroughly studied as equipment is modified, upgraded and/or replaced.

Chapter XII

CHEMICAL USE, STORAGE AND DISPOSAL

GENERAL

Use of chemical experiments in science laboratories demonstrate the application of principles taught in chemistry and biology classrooms. Interaction of many chemicals under certain conditions product violent reactions, fire hazards and emit toxic fumes. Carcinogenic (cancer induction) properties secondary to extreme but silent toxicity occur which may take up to 20 years to become evident.

Use of these compounds should be carefully supervised by science teachers knowledgeable in the handling and potential hazards of chemicals. Adequate ventilation in the general laboratory and fume hoods for potentially dangerous experiments must be available. Large, readily accessible sinks with adequate pressurized water flow and fire extinguishers are essential safety devices if spillage or explosions occur. Application of first aid principles and access to supplies for use if laboratory accidents occur need to be readily available.

Safe storage and approved disposal of chemicals must be maintained. Purchase of large quantities of chemicals to save cost should be discouraged. They generally end up unused and thrown away.

USE OF CHEMICALS

Common organic solvents like benzene, methyl alcohol, acetone, and many others can have a serious toxic effect if inhaled over an extended period. Their use requires good window ventilation or a fume hood.

PTC papers (phenylthiocarbamide or phenylthiourea) are normally used in biology programs. A cautious attitude is advised toward the use of PTC taste papers. The PTC taste papers are used to illustrate the genetic transmission of the ability to taste the compound. The FDA has not approved PTC. The substance is a rodenticide.

Chronic pencil chewers may get lead poisoning from the paints used on some pencils. The marker part of the pencil is graphite, not lead.

Carbon tetrachloride is extremely poisonous and rapidly absorbed in liquid and vapor form by the body fat. It is banned from sale from home use by the FDA. Most poisonings are due to inhaling fumes. The recommended safe tolerance for air is 10 ppm (parts per million). However, it is not detected by smell until the concentration in the air reaches 80 ppm. It can cause acute liver damage and kidney failure. Some individuals are more susceptible than others depending upon age, obesity, and general health. No specific treatment or antidote is known. Almost all body cells are affected by the toxin. Most school laboratory chemical supplies contain carbon tetrachloride. It should be used only when absolutely necessary and with extreme caution in a well-ventilated area. It should never be used as a fire extinguishing medium or in insect-killing containers.

Potassium chlorate is one of the most frequent causes of serious explosions because of its strong oxidizing power and sensitivity to shock. Slight amounts of combustible impurities like carbon or sulfur may cause an explosion through mild friction or impact. Potassium chlorate should be tested for impurities before it is used in demonstrations or class experiments. This can be done with small amounts and well in advance of usage. Some chemists have suggested eliminating it from school laboratory shelves completely.

Chemicals that are activated by water, like hydrogen peroxide, calcium carbide, and calcium oxide should be kept in airtight and waterproof containers when not in use in order to avoid fire or explosion. Calcium carbide, in addition, produces highly combustible acetylene when reacting with water. If sodium or potassium are used, pupils should be cautioned about handling it. The teacher should dispense these metals in small pieces. Pupils should not have access to large chunks of these metals. The temptation to use too much is hard to overcome. The pupils should also be warned about the spattering of sodium.

Ammonium dichromate to simulate volcanic eruptions in volcano models is hazardous. The compound is toxic, flammable, and may react explosively with certain organic compounds. It should be kept in a tightly-closed container and away from an open flame. The vapors may have a corrosive action on the skin and mucous membranes, causing a rash or external ulcers. Ammonium dichromate can emit highly-toxic fumes when heated. A substitute for this compound is strongly recommended for such a demonstration.

Chlorine gas is very poisonous and hence should be made only in small quantities. Only the most reliable pupils should be permitted to perform the experiment of making the gas, and then, only after having been specifically advised as to the hazards involved. One generator may be set up on each table or in hood compartments. Adequate ventilation must be provided to prevent the accumulation of dangerous quantities of the gas in the room. The experiment should be closely supervised by the teacher at all times.

CARCINOGENS

In January 1975, the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), declared 14 chemicals to be cancer causing substances (carcinogens).

These compounds should be safely stored or disposed of if they are among the school science laboratory supplies. The only exception to the ban on their use in the science program should be if they are absolutely essential for special projects under strict personal supervision by a certified science teacher who is knowledgeable in the handling and use of such compounds. These compounds are extremely toxic; even at levels of one part per billion (1 ppb).

Listed below are the 14 carcinogens discussed above:

1. 4-Nitrobiphenyl (4-NBP)

   Other names include: 4-Nitrodiphenyl; p-Nitrobiphenyl; and p-Nitrodiphenyl.

2. Alpha-naphthylamine (1-NA)

Other names include: 1-NA; Naphthylamine; Fast Garnet Base B; Antioxidant Mb; 1-Aminoaphthalene; Naphthalidam; and Naphthalidine.

3. 4,4'-Methylene bis (2-chloroaniline)
Other names include: MOCA.

4. Methyl chloromethyl ether (CMME)

Other names include: chlorodimethyl ether; chloromethyl ether; and chloromethyl methyl ether.

5. 3,3' Dichlorobenzidine (and its salts)

Other names include: 4,4' Diamion; 3,3'-Dichlorobiphyl; 4,4' Diamine; 0,0'-Dichlorobenzidine; and similar names.

6. Bis (chloromethyl) ether (BCME)

Other names include: Chloro (chloromethoxy) methane; sym-dichloromethyl ether; and similar names.

7. Beta-Naphthylamine (2-NA)

8. Benzidine

Other names include: Fast Corinth Base B; p-Diaminodiphenyl; 2-Aminodiphenyl; C.1 Azoic Diazo Component 112; p-p'Bianiline; Benzidine dihydrochloride; Benzidine sulfate; and 4-4'-Diaminobiphenyl.

9. 4-Aminodiphenyl

Other names include: 4-ADP, PAB; Biphenyline; P-Phenylaniline; Xenylamine; P-Aminobiphenyl; and other names.

10. Ethyleneimine (EI)

Other names include: Azirane; Azacyclopropane; Aziridine; Dimethyleneimine; Dihydroazirine; and similar names.

11. Beta-Propiolactone (BPL)

Other names include: Betaprone (a trademark); 2-oxetanone; propiolactone; B-lactone hydrocrylic acid; 3-Hydroxypropionic acid lactone; and similar chemical names.

12. 2-Acetylaminofluorene

Other names include; AAF; 2-AAF; FAA; 2-FAA; 2-Fluorenylacetamide; 2-Acetamidofluorene; and N-Acetylaminophenathrene.

13. 4-Dimethylaminoazobenzene (DAB)

Other names include: Solvent Yellow 12; Fat Yellow; Oil Yellow; Cerasine Yellow; DMAB; Brilliant Fast Spirit Yellow; Methyl Yellow; N; Aniline; N-dimethyl-p-(Phenylazo); Benzeneaxo Dimethylaniline; and similar names.

14. N-Nitrosodimethylamine (DMN)

Other names include: Dimethylamine; Nitrous dimethylamide; N, N-Dimethylnitrosoamine; Dimethylnitramine; and similar names.

INCOMPATIBLE CHEMICALS

The following is a partial list of chemicals commonly found in school laboratories. Many chemicals react violently, produce toxic fumes, and are fire hazards when they interact. The chemicals listed in the left-hand column should be stored in a manner that will prevent them from coming in contact with those in the right-hand column.

Actic Acid	Chromic acid, nitric acid, perchloric acid, ethylene glycol, hydroxyl compounds, peroxides, and permanganates
Acetone	Concentrated sulfuric and nitric acid mixtures
Acetylene	Bromine, chlorine, fluorine, copper tubing, as well as silver, mercury, and their compounds
Alkali metals (K, Na, Ca), powdered aluminum, and magnesium	Water, carbon dioxide, carbon tetrachloride, and the halogens
Amonia, anhydrous	Mercury, hydrogen fluoride, and calcium hypochlorite
Ammonium nitrate	Strong acids, metal powders, chlorates, nitrates, sulfur, flammable liquids, and finely-divided organic materials
Aniline	Nitric acid and hydrogen peroxide
Bromide	Ammonia, acetylene, butane, hydrogen, sodium carbide, turpentine, and finely-divided metals
Carbon, activated	Calcium hypochlorite, all oxidizing agents
Chlorates	Ammonium salts, strong acids, powdered metals, sulfur, and finely divided organic materials.
Chromic acid	Glacial acetic acid, camphor, glycerin, naphthalene, turpentine, lower molecular weight alcohols, and many flammable liquids
Chlorine	Same as for bromine
Copper	Acetylene and hydrogen peroxide

Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, sodium peroxide, nitric acid, and the halogens
Hydrocarbons (butane, propane, benzene, gasoline, and turpentine)	Fluorine, chlorine, bromine, chromic acid, and sodium peroxide
Hydrofluoric acid	Ammonia (aqueous or anhydrous)
Hydrogen peroxide	Copper, chromium, iron, (most metals or their salts), flammable liquids, and other combustible materials
Hydrogen sulfide	Nitric acid and certain oxidizing gases
Iodine	Acetylene and ammonia
Nitric acid	Glacial acetic acid, chromic and hydrocyanic acids, hydrogen sulfide, flammable liquids, and flammable gases which are easily nitrated
Oxygen	Oils, grease, hydrogen, flammable liquids, solids, and gases
Perchloric acid	Acetic anhydride, bismuth and its alloys, alcohols, paper, wood, and other organic materials
Phosphorus pentoxide	Water
Potassium permanganate	Glycerin, ethylene glycol, and sulfuric acid
Silver	Acetylene, ammonia compounds, oxalic acid, and tartaric acid.
Sodium peroxide	Glacial acetic acid, acetic anhydride, methanol, carbon disulfide, glycerin, benzaldehyde, and water.
Sulfuric acid	Chlorates, perchlorates, permanganates and water.

DISPOSAL OF BULK AND ACCUMULATED CHEMICALS

This part should serve as a guide for disposal of any one laboratory chemical in a quantity greater than 100 milliliters or an accumulated quantity of different chemicals totaling greater than 1 kilogram. This applies particularly to those laboratories where housecleaning and disposal of stockpiled chemiclas on a one-time basis is involved.

Disposal of a chemical in a unapproved manner or location must be avoided. This includes dumping in lakes, wells, fields, roadside ditches, etc. Federal and state authorities enforce serious penalties if they become aware of the disposal. Unknowing persons may be seriously harmed or injured. Liability suits occur for damages or injuries.

In school environments waste chemicals may be dumped into trash collection containers. This is extremely dangerous for people involved in collection and transportation of solid waste; therefore, it should be avoided.

The following outlines the accepted procedure for disposal of bulk chemicals in Kansas:

1. Prepare an inventory of all chemicals both known and unknown which require disposal. This inventory must include the following information:

   a. Identification of the chemical (if unknown describe to the best of your ability).

   b. Quantity

   c. Physical form (liquid, solid, gaseous)

   d. Condition of storage container

2. Contact the following, either by telephone or in writing upon completion of inventory:

   John Paul Goetz
   Kansas Department of Health and Environment
   Bureau of Waste Management
   Forbes Field
   Topeka, Kansas 66620
   Telephone: (913) 296-1600

3. The department will review the list and tell you where each chemical can be disposed. The chemicals which are considered hazardous waste due to the type and quantity must be transported to an approved disposal facility. Other chemicals which can be disposed at the county sanitary landfill will be approved in writing. This approval will specify the disposal procedures and alert the landfill operator as to what precautions should be taken. Waste chemicals should not be delivered to the landfill without written approval from the department.

Chapter XIII

FIRE PREVENTION

GENERAL

The State Fire Marshal is required by State statute to conduct a fire prevention inspection of all public and private schools in Kansas at least annually. The inspections are made by representatives of the State Fire Marshal's Office or on behalf of his office by local Fire Prevention Inspectors.

For the purpose of these required inspections, an educational occupancy is defined as "those buildings used for gatherings of six or more persons, four or more hours a day, or more than twelve hours a week, for the purpose of instruction through the twelfth grade."

Educational occupanices are inspected in accordance with the requirements of the National Fire Protection Association Life Safety Code 101 section on educational occupancies.

Schools present a broad range of activities which can vary from those of education in a classroom of low-fire-hazard risk to that in a laboratory or shop where the contents may pose a moderate or high fire hazard potential. Normal use may include large assembly areas such as auditoriums, cafeterias and gymnasiums, where the fire hazard is low or moderate, and the concentration of occupants is high. During a fire safety inspection, the inspector must give consideration to the activities which take place in any given area, the number of occupants, and their age.

INSPECTION

The inspection of a facility will include, but is not limted to, the following items:

1. The time, date and number of pupils participating in fire and tornado drills.

2. The fire alarm system and it's adequacy in notifying occupants of fire in the structure.

3. The construction type, number of stories and whether there is a basement in the building.

4. The heating, air conditioning and associated air handling equipment. Note: Boilers are inspected by the State Boiler Inspector.

5. A detailed inspection of potential hazard areas such as laboratories, shop rooms and storage rooms.

6. Stairways used as a means of exit from the building. Those connecting more than two floors, or leading to a basement must be enclosed.

7. Fire Escapes. Although new construction prohibits external fire escapes they may be permitted in existing facilities provided they are of metal, free standing and adjacent building openings are protected through the use of wired glass.

8. Approved doors and adequate exits for evacuation of the building. Exit signs indicating exit doors and path to be taken to an exit door. Lighted exit signs are required.

9. Obstruction of exit ways, such as coat racks, chairs, desks and other items in hallways, on stairways and under stairways.

10. Locking of doors. ALL exit doors must remain unlocked to exit travel during ALL periods of occupancy. Interior doors must be unlocked during any period of occupancy of the room.

11. Interior finish of rooms and hallways including the presence of decorations of a temporary although flammable nature.

12. Apparent adequacy of electrical wiring, fuses and circuit breakers. Types and use of extension cords.

13. Provisions for emergency lighting. Emergency lighting is required in windowless areas, areas of low light conditions and in facilities having night time use.

14. Kitchens are inspected for type of cooking fuel used, adequacy of smoke and vapor removal hoods and presence or need for a fire suppression system.

15. The presence of portable fire extinguishers of a proper type for their intended use and the proper maintenance of the extinguishers.

16. The general housekeeping provided for the facility, including storage of flammable paints, solvents, gasoline and other flammable liquids used by art classes, shop areas and building maintenance personnel.

The Fire Prevention Inspection will, in normal circumstances, make an appointment with the District Superintendent and arrange for an escort while making his inspection. A surprise inspection would be very rare and then usually only after contact with the District Superintendent and receipt of a specific complaint of a hazardous condition requiring immediate attention.

The results of the inspection and a copy of the report are furnished to the District Superintendent for his use in conjunction with his Board for the correction of deficiencies found during the inspection. That report includes those deficiencies which are considered major and require prompt attention as well as those considered minor which may be addressed during normal maintenance procedures as time and funds permit.

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3. Kansas Safety Education Handbook, volume III pp. 1739-1801.

REPORT OF SCHOOL INSPECTION

BY LOCAL HEALTH OFFICER

Name of School_____ No. of Pupils_____

Address_____ U.S.D. #_____

City_____ County_____

Telephone_____ Type of School: (please check)

Date of Inspection_____

____preschool ____middle school
____elementary ____junior high
____special ed. cooperative ____high school

NOTE: References to laws and standards are described in the School Inspection Manual

Please check: YES ( ) if true NA ( ) not applicable
(If your answer is "No", please do not check either "Yes" or "NA")

	Yes	NA	Comments about response
1. Water Supply			
a. Source of water			
1. Public supply with current state water purity permit	( )	( )	_____
2. Private supply	( )	( )	_____
b. Quantity of water adequate	( )	( )	_____
c. Quality of water			
1. On monitoring program	( )	( )	_____
2. Meet Federal Safe Drinking Water Act (P.L. 99-339) standards	( )	( )	_____
3. Meet State (K.S.A. 65-163) standards	( )	( )	_____
4. Disinfection practiced (chlorination)	( )	( )	_____
D. State certified operator	( )	( )	_____
2. Plumbing			
a. Lavatories			
1. Number meets fixture-to-occupant ratio, 1 per 50 students	( )	( )	_____
2. Pressurized hot and cold water delivered through mixing valve or combination faucet	( )	( )	_____
3. Soap available for each lavatory and either disposable towels or hand drying device near hand washing facilities	( )	( )	_____
4. Maximum water temperature 120°-130° F	( )	( )	_____

	Yes	NA	Comments about response
b. Water Closets and Urinals			
1. Are 2 water closets provided in each toilet room?	( )	( )	_____
2. Are the following education (student) occupancy fixture-to-occupancy ratios met?			
Water closets for males, 1 per 50 students	( )	( )	_____
Water closets for females, 1 per 35 students	( )	( )	_____
Urinals for males, 1 per 35 students	( )	( )	_____
3. Are the following assembly (non-student) occupancy fixture-to-occupancy ratios met?			
Male water closets, 1 per 100 persons	( )	( )	_____
300 users, additional 1 per 500 persons	( )	( )	_____
Female water closets 1 per 100 persons	( )	( )	_____
300 users, additional 1 per 300 persons	( )	( )	_____
4. Are grades K through 6 provided an extra water closet?	( )	( )	_____
5. Are toilets and lavatories cleaned daily or more frequently when school is in session?	( )	( )	_____
c. Showers			
1. Are shower heads provided at the ratio 1 per 5 students for each sex for gymnasiums, organized sports or physical education classes?	( )	( )	_____
2. Are the showers well drained?	( )	( )	_____
3. Are the shower tiles, both wall and floor, washed with disinfectant soap daily?	( )	( )	_____
d. Drinking water fountains			
1. Is one drinking fountain provided on each floor occupied by students?	( )	( )	_____
2. Is the following educational occupancy-to-drinking fountain ratio of 1 per 75 students met?	( )	( )	_____

	Yes	NA	Comments about response
3. Is the assembly occupancy-to-drinking fountain, ratio of 1 per 100 students met?	( )	( )	_____
4. Are drinking fountains in restrooms?	( )	( )	_____
5. Are drinking fountain fixtures accessible to children, K through 6?	( )	( )	_____
6. Are drinking fountain fixtures cleansed one time per day when school is in session?	( )	( )	_____

e. Service Sinks

1. Is a mixture of hot and cold water available at the water outlet and equipped with a hose bib?	( )	( )	_____
2. Is an approved vacuum breaker maintained with each combination faucet?	( )	( )	_____
3. Are backflow prevention devices provided for the following?			
a. Boilers	( )	( )	_____
b. Sinks	( )	( )	_____
c. Toilets (including urinals)	( )	( )	_____
d. Kitchens	( )	( )	_____
e. Showers	( )	( )	_____
f. Swimming pools	( )	( )	_____
g. Conveying Systems	( )	( )	_____
h. Laboratories	( )	( )	_____
i. Hose Bibs	( )	( )	_____
j. Sprinkler Systems	( )	( )	_____

3. Sewage Disposal

a. How is liquid waste disposal handled?

1. Approved public sewer system	( )	( )	_____
2. Approved private sewer system	( )	( )	_____

b. Is the liquid waste system protected from leakage by all or some of the following methods:

1. Outside ventilation of gas	( )	( )	_____
2. Water trap within the building	( )	( )	_____
3. No direct connections between liquid sewage and water supply	( )	( )	_____

	Yes	NA	Comments about response
4. Illumination			
a. Quantity-measured by a light meter approved by Illuminating Engineering Society			
1. Does the quantity of illumination in each student room conform to the standards on Table I, Chapter on "Illumination"	( )	( )	_____
b. Quality			
1. Is general diffuse lighting present in all classrooms?	( )	( )	_____
2. Is the artificial lighting arrangement designed to minimize glare?	( )	( )	_____
5. Thermal Environment			
a. Are schol policies enforced to regulate classroom temperature 68•F to 74•F during winter months, and 74•F to 89•F during summer months?	( )	( )	_____
b. Is exhaust ventilation installed and functional for elimination of air contaminants from welding shops, chemical laboratory, chlorination of swimming pools, etc.?	( )	( )	_____
c. Is a ventilation system maintained to provide a basic minimum of contaminant-free air necessary to support for healthful respiration of students?	( )	( )	_____
6. Acoustics			
a. Is the hearing of students and staff audiometrically tested prior to entrance into areas of 80 dB prolonged noise levels and rechecked periodically?	( )	( )	_____
b. Are NIOSH approved ear protectors provided in areas of high-risk noise levels over prolonged periods of time?	( )	( )	_____

	Yes	NA	Comments about response
7. Arthropod and Rodent Control			
a. Are washrooms and shower rooms cleaned daily during the school year?	( )	( )	_____
b. Are garbage, trash, brush wood or other materials that might support insects or rodents removed daily and sealed in containers until final removal can be accomplished?	( )	( )	_____
8. General Housekeeping and Maintenance			
a. Are supervisors of housekeeping and custodial care provided inservice or Vo-Tech custodial training and update on cleaning methods and materials at time of employment and at subsequent periodic intervals?	( )	( )	_____
b. Are custodial supplies and equipment stored in properly lighted and ventilated areas?	( )	( )	_____
c. Is a custodial schedule itilized to insure proper cleaning and maintenance?	( )	( )	_____
d. Are custodial duty schedules periodically reviewed by the administrative staff?	( )	( )	_____
e. Is a protocol book available which provides directions and procedures for assembly, care and repair of all tools and cleaning equipment?	( )	( )	_____
9. Handicap Provisions			
a. Are parking areas for handicapped marked in student, staff and visitor parking lots?	( )	( )	_____
b. Is one accessible entrance available from the outside through an accessible entrance to the school other than through a service entrance?	( )	( )	_____
c. Is the international symbol of accessibility displayed at a major entrance?	( )	( )	_____
d. Do handrails installed on both sides of stairways extend 12 inches beyond the bottom and top step?	( )	( )	_____
e. Are ramps constructed to provide an easy and safe rise for a wheelchair?	( )	( )	_____

	Yes	NA	Comments about response
f. Is at least one drinking fountain accessible to the handicapped students on each floor?	( )	( )	_____
g. Is there one accessible toilet for each sex on each floor for handicapped students?	( )	( )	_____

10. Asbestos

a. Has the school been evaluated for compliance with the Feederal Asbestos School Hazards Abatement Act? ( ) ( ) _____

11. Miscellaneous

a. When was the last fire inspection done? _____ Month _____ Year

b. When was the last Humans Resource inspection done? _____ Month _____ Year

c. Were chemical storage and disposal inspected by Human Resources? _____ Month _____ Year

Comments:

_____ _____
Date Signature of County Health Officer/Delegated Alternate

_____ _____
Date Signature of School Administrator

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