PRECAUTIONS AGAINST DISEASE AND INJURY IN FLOOD AREAS

I. DISEASES

1. TYPHOID - No cause for alarm

Typhoid immunization is not recommended during flooding. Routine typhoid immunization in the United States during normal times is not indicated, and immunizations administered at the time of flood will not be effective due to the delay in development of the immune state (three weeks). There is virtually no danger of contracting typhoid solely because of a flood.

2. HEPATITIS -A

Hepatitis A vaccine preparation is currently available in the USA in two forms. However, the use of hepatitis A vaccine or immune globulin is not recommended because Hepatitis A outbreaks have not been associated with floods.

3. INTESTINAL ILLNESS

Intestinal illness may occur with symptoms of nausea, vomiting, diarrhea, and fever. Organisms that live in the intestines of animals and sometimes humans may contaminate flood waters. The best and most effective prevention against the disease agents that may be present in flood waters is avoid contaminated drinking water and food (see the hygeine andclean-up guidelines below).

4. TETANUS - A risk

Tetanus (Lockjaw) may result from any wound which breaks the surface of the skin, particularly puncture wounds or deep cuts. Anyone receiving a wound where the skin is penetrated should consult a physician to assure that the wound is clean and not infected and that their tetanus immunization is current.

Chemoprophylaxis against tetanus is neither practical nor useful in managing wounds. Wound cleaning, debridement when indicated, and proper immunization are important. The need for tetanus toxoid (active immunization), with or without Tetanus Immune Globulin (TIG), depends both on the condition of the wound and the patient's vaccination history. Rarely has tetanus occurred among persons who received a primary series of toxoid injections.

Available evidence indicates that complete primary vaccination with tetanus toxoid provides long-lasting protection for most recipients. Consequently, after complete primary tetanus vaccination, boosters - even for wound management - need only be given every ten years when wounds are minor and uncontaminated. For other wounds, a booster is appropriate if the patient has not received tetanus toxoid within the preceding five years.

If injury occurs the following table of recommendations should be followed:

	Clean minor wound		All other wounds[1]	
History of absorbed tetanus toxoid (doses)	Td[2]	TIG	Td[2]	TIG
Unknown or less than three doses	Yes	No	Yes	Yes
three or more doses	No[4]	No	No[5]	No

1. Such as, but not limited to, wounds contaminated with dirt, feces, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite.

2. For children <7 years old; DPT. or DT is preferred.
3. Yes, if >10 years since last dose.

4. Yes, if >5 years since last dose.

5. RESPIRATORY/ ALLERGIC REACTIONS

Respiratory problems may be caused by bioaerosols, or airborne particles, released by bacteria, fungi, molds and related organisms or by the chemicals used to disinfect flooded living areas. Excess moisture in buildings after a flood can create the potential for these respiratory problems. High relative humidity (greater than 70%) in a structure leads to problems. Many materials exposed to floodwaters will hold moisture for an extended period and provide favorable conditions for these organisms.

While respiratory ailments and allergies are the most common result of inhaling these organisms, they can have much more serious effects. In rare instances, exposure to bioaerosols can cause rampant infection characterized by fever, malaise, respiratory distress, shock and even death. Keeping the indoor environment free from water intrusion and at a relative humidity less than 60% and removing any pooled water as quickly as possible will retard indoor growth of bacteria and fungi. Surfaces supporting the growth of these organisms are cleaned using dilute bleach (half cup of bleach to a gallon of water), after which the surface should be rinsed with clean water and dried. Contaminated soft material such as carpets, draperies, furniture fabric, wallboard, paper, insulation materials etc., may not be cleanable and should be discarded.

6. LEPTOSPIROSIS

Leptospirosis or mud fever is a group of bacterial diseases with various manifestations. Common features are sudden-onset of fever, headache, chills, severe muscle aches, and watery eyes. Other symptoms may include rash, anemia, jaundice, mental confusion, and depression. Symptoms usually appear within 10 days. The disease is treated with antibiotics, penicillin, and erythromycin. If treated, the symptoms usually lasts a few days to three weeks or longer. Leptospirosis occurs when a person is exposed to water contaminated by the urine of domestic or wild

animals.

Following preventive measures may reduce the risk of exposure to these bacteria:

> Avoid swimming or wading in potentially contaminated waters.

> If working in an environment where exposure is possible, individuals should wear protective clothing.

> Recognize potentially contaminated soil and waters and drain such waters when possible.

> Control rodents in human habitations.

> Segregate domestic animals to prevent them from contaminating living, working and recreational areas with urine.

> Immunize farm animals and pets to prevent disease.

7. NORWALK VIRUS

Norwalk Virus causes an acute infectious gastroenteritis. Norwalk is a common water-borne agent and may be carried on foods whose preparation requires extensive hand contact. The illness may be caused by eating uncooked clams and oysters. Norwalk virus causes no long-term health effects. Symptoms usually last from one to two days or more, with an incubation period of about the same duration.

The symptoms include diarrhea, dehydration, cramps, vomiting, fever, muscle aches, headache, chills and weakness. Victims may require hospitalization to replace lost fluids. Antibiotics are not used to treat Norwalk viruses. Prevention requires proper hand-washing after using bathrooms, especially for those who handle food. Consumption of clams and oysters from a flooded area is risky until effective control measures are taken. Sanitary disposal of feces and protection of water contamination by sewage is an essential preventive measure.

8. TULAREMIA

Tularemia is a bacterial disease that is also known as rabbit fever. The disease is most commonly transmitted by the blood or tissue of an infected animal or spread by the bite of ticks and deerflies or by drinking contaminated water. People may become infected from handling dead animal carcasses. Symptoms may include slow growing ulcers usually on the hand and swollen lymph nodes. If the bacteria are inhaled, a pneumonia-like illness can follow. If the bacteria are ingested, they may cause throat sore, abdominal pain, diarrhea and vomiting. The symptoms may emerge two to 10 days after exposure to the bacteria. Tularemia is treated with streptomycin, although other antibiotics also are effective. This sickness is not transmitted from person to person.

The following measures may help prevent tularemia:

> avoid bites of flies, mosquitoes, and ticks.

> Avoid drinking, bathing, swimming or working in untreated water where infection is common among wild animals.

> Use impervious gloves when skinning or handling animals, especial
rabbits. Cook the meat of wild rabbits and rodents thoroughly.

9. INFESTATIONS -SCABIES, HEAD LICE

The crowded conditions in shelters during flooding, may result in infestations of scabies or head lice.

A. SCABIES

Scabies is a skin disease caused by an almost invisible organism commonly called the “itch mite” (Sarcoptes Scabiei). Scabies is

transmitted through direct contact with an infected person. Once the mite is transmitted to a person, the male and female mate on the surface of the skin and eggs are laid under the surface of the skin. The eggs hatch in a few days. An infestation is most often found in the spaces between the fingers, elbows, armpits, breasts, groin, along the belt line and on the back or buttocks causing intense itching, especially at night. The only way to confirm scabies is to see the physician who can identify with microscopic examination. To prevent infection wash hands often, wear clean clothes daily and do not exchange clothes with others. If any member of your family has scabies, all others should be checked immediately.

B. HEAD LICE

Head lice or Pediculosis may be transmitted through direct or indirect contact. The earliest common symptom of an infestation is itching, particularly in the area behind ears and at the nape of the neck. Intense scratching may lead to secondary bacterial infection. Prescription and over the counter remedies are effective in treating head lice. Overuse of these pediculicides may cause dermatitis. The pediculicides usually do not kill nits (lice eggs) completely. It is recommended that infested patients be treated twice. The interval between treatments should be approximately the incubation period for the nits (seven to 10 days). For specific methods used to treat the infested person consult your family physician.

10. HYPOTHERMIA

Hypothermia is a concern at any time of the year. A wet body loses heat 30 times faster than a dry body. Water below 80 degrees poses a risk of hypothermia; water less than 50 degrees is extremely dangerous. Hypothermia can lead to shock or death and contributes to drownings. Effort should be made to avoid getting wet, in particular, avoid entering the flood waters.

11. OTHER DISEASES

Other diseases may appear because of flooding, notably dysentery or diarrhea. There is no good immunization against these diseases. Excellent personal hygiene and the avoidance of eating or drinking contaminated food are the prime preventive measures.

I. HYGIENE

1. PERSONAL HYGIENE

Wash hands thoroughly with soap and water after handling contaminated articles or working in flood clean-up. Hands should be washed with soap and water after using the bathroom, handling grossly contaminated articles and before preparing or eating food. Clean non-drinkable water may be used but drinkable water is preferred.

When the flood water has left the home, scrub all affected surfaces with soap and water, then rinse with a chlorine solution of **two and a half cups household chlorine laundry bleach to three gallons of water**. Do not mix chlorine with ammonia or other cleansers containing ammonia.

2. HOME CLEAN-UP

Flooded indoor areas must be scrubbed with warm soapy water. Pay particular attention to food contact surfaces and areas where small children play. Then rinse with a solution made by adding 1/2 cup (4 ounces) of laundry bleach to each gallon of water. Wash all linens and clothing in hot water or have them dry cleaned. Items that can neither be washed nor dry cleaned should be air dried in the sun, vacuumed, and sprayed with a disinfectant. Steam clean all carpeting. If there has been a back-flow of sewage into the house, remove and discard any absorbent household materials, such as wall coverings, cloth, and rugs. Be sure to wear water proof gloves and boots during the clean-up.

3. SEWAGE DISPOSAL

After floodwaters recede, usually minimal repairs may be necessary for a private sewage system. Outdoor toilets flooded, should be scrubbed throughly with a solution of 1/2 cup of laundry bleach per gallon of water. In the aftermath of a flood, most communities will provide portable toilets, but these may be limited.

If no toilet facilities are available, deposit body waste in a watertight receptacle meant for that purpose only. Place a small amount of water in the receptacle before it is used to make emptying easier. Dig a trench or pit and empty the contents of the receptacle into this pit when possible after each use. Cover the waste in the trench after each use with a layer of dirt, ashes or lime. Also, empty the water used to wash the receptacle into the pit or trench. When closing the trench, cover it with at least 12 inches of earth.

4. ANIMAL CARCASES

Prompt and sanitary disposal of animal carcases is necessary to protect living animals in the area from disease. Search all pastures for dead animals when possible. Carcasses may have some commercial value, so check with a rendering plant and see if it can quickly pick up dead animals. If not, bury the carcasses at least three to four feet deep. Choose a site where subsurface drainage will not reach water supplies. If possible, cover carcasses with quicklime before back-filling to hasten decomposition.

5. MOSQUITOES

The large amount of pooled water that remains after a flood provides an ideal breeding ground for mosquitoes. While most of these mosquitoes will be merely pests, some can carry communicable diseases. The following guidelines are provided to protect from mosquitoes:

> Be sure door and window screens are tight-fitting and in good repair.

- Wear long -sleeved and long legged clothing.

- Use a mosquito repellent which contains DEET. When outdoors, apply repellent sparingly to exposed skin or clothing, as suggested on the product's label.

- Drain standing water in old tires, tin cans, bird baths, yard ornaments or other places where mosquitoes might breed.

- Make sure cisterns, cesspools, septic tanks, fire barrels and rain barrels are covered tightly.

- Empty your pet's bowl daily.

- If you have an ornamental water garden or livestock water troughs, stock them with mosquito-eating fish (e.g., minnows, gambusia, goldfish, guppies, etc.).

- Keep weeds and tall grass cut short; adult mosquitoes look for these shady places to rest during the hot daylight hours and after a blood meal.

- Use a household spray to kill mosquitoes, flies, or other insects that get into buildings. Spray shrubbery and shaded areas of buildings to kill adult insects. Read and follow label directions when applying any insecticide.

III. WATER

1. SAFEGUARDING DRINKING WATER

Drinking water contaminated by flood water may carry micro-organisms capable of producing diarrhea, dysentery, enteritis, and other water-borne diseases. Public and private water supplies may be contaminated in a flood. After a flood, consider all water unsafe. Listen for public announcements on the safety of your area's water supply and follow the

instructions of local authorities. The safest approach is to drink and cook with bottled water or water previously stored in the refrigerator. However, all drinking water from wells or springs which may have been contaminated by flood water should be boiled at least two minutes. If you cannot boil it , add five drops of household bleach to each gallon of water. Mix thoroughly and allow to stand for 30 minutes. This method should be used only with water that is clean in appearance and free of odor.

2. SPECIFIC USES

Drinking liquids, such as pop and bottled water sealed by the producer may be used directly from the container. (Drinking surface should be sanitized with boiling water or a bleach solution).

For brushing teeth clean non-boiled water may be safe, but it is best to use boiled water.

For other uses: Water out of the tap (if available) may be used for showering or toilet flushing.

3. TO RESTORE A FLOODED WELL

More detailed information can be obtained from your county health department or the Bureau of Local Services (614) 466 - 1390.

A. Pump as much dirty water from the well as possible, draining the complete piping system. Extend water tight casing above flood level and seal with a snug fitting well cap or lid.

B. Disinfect the well by first removing the well cap or plug if the well is equipped with a sanitary well seal. Pour one gallon of household bleach (5.25% chlorine) directly into the well. Connect a hose to a house spigot and run water directly into the well until chlorine odor is present in the water, run water this way for fifteen (15) minutes. Shut off water supply to the hose and proceed to systematically

open each water fixture in the house.

C. Let water run through each fixture until the chlorine odor is present (include both cold and hot water valves).Close all valves and pour another one gallon of bleach directly into the well. Recap the well or replace the sanitary seal. Leave all valves closed for a period of at least twelve (12) hours [24 hours, if possible]. Toilets may be flushed during this period if necessary.

D. After the twelve hours, open the hose spigot and discharge water to the ground surface or drainage ditch until the chlorine odor disappears. Open every household fixture and let water run until the chlorine odor is gone.

E. After all chlorine has been removed from the system (no chlorine odor or taste in the water), a water sample should be collected by your local health agency for bacterial analysis. If you wish to collect your own sample and have it analyzed by a private laboratory, such analysis should be done by a laboratory approved by the Ohio Environmental Protection Agency/Ohio Department of Health.

A list of approved laboratories may be obtained by contacting **The OHIO DPARTMENT OF HEALTH , BUREAU OF LOCAL SERVICES at (614) 466-1390.**

IV. FOOD

1. SAFEGUARD AGAINST CONTAMINATED AND SPOILED FOOD

A. INFANT FORMULA

Use premixed formula. If pre-mixed formula is not available, you may mix the formula with drinkable water (see above) however, premixed formula is preferred. During late spring flooding listen

for warnings about nitrate contamination of drinking water. Do not use tap water if there is a warning about nitrates.

B. CANNED FOODS

All canned foods, meats, and vegetables in direct or indirect contact with flood water should be treated as follows:

> Throw away food containers showing signs of leakage or swelling.

> Destroy the contents of corked bottles and screw-top glass containers covered by flood waters.

> Carefully wash with soapy hot water all canned goods which have been covered with flood water. Sterilize the end of the washed can to be opened by dipping it into boiling water for 30 seconds or wiping the top with full strength chlorine bleach. Be sure the can opener is clean.

2. VEGETABLES

Destroy all root and garden vegetables or foods in cardboard or similar containers in contact with flood waters.

3. MILK

Be sure that the milk you drink is properly pasteurized. Canned or powdered milk may be substituted for fresh milk. If mixing powdered milk, be sure that boiled or disinfected water is used. Powdered milk should be used immediately.

4. FISH

Because of untreated sewage and/or decaying carcasses, there are likely to be pathological microorganisms in floodwaters that can present a

small, but real, potential for human infection through fish. Consuming uncooked or undercooked fish carries the possibilities of diseases: salmonella, hepatitis, giardia, and cryptosporidia.

As a rule, do not take fish from the floodwaters. However, any fish with an unusual odor or whose flesh is an unusual color, should not be eaten. Fish with unusual behavior, in obvious distress, with cuts or sores, or which have not been caught live, should be avoided. If in doubt, releasing the fish is best or discard the carcass in a sanitary landfill or bury the carcass to prevent it becoming a source of disease.

5. REFRIGERATED FOOD

If refrigeration fails as long as for several hours, foods may spoil. If not eaten while still cool (45 degrees F or lower) or cooked right away, foods should be thrown away.

6. FROZEN FOOD

Foods that thaw should be used right away and not refrozen. Cooked foods, such as stews or leftovers stored in deep freezers should be used right away if thawed. If the freezer temperature has been 50 degrees or higher for several hours, thawed foods may be used within a few hours. Thawed meats should not be served rare, but should be thoroughly cooked before eating.

V. SAFETY/ INJURY CONTROL

1. DROWNING

The risk of drowning should be everyones number one concern. In flood situations there are often hidden dangers such as currents, tree limbs and other debris, and deep spots which lead to drowning. Do not wade or swim in the water except to avoid an imminent threat to life.

2. UTILITIES

Repairs and clean-up go more quickly if certain safety precautions are taken with regard to the home utilities.

A. NATURAL GAS

When returning to your home check immediately for leaking gas pipes. Do this by smell only. If you must use a light, use battery powered flash light or lanterns. If you smell gas or suspect a leak, turn off the main gas valve at the meter, open all windows and leave the house. Notify the gas company or the fire department.

DO NOT TURN ON OR OFF LIGHTS AND DO NOT USE CANDLES, OIL OR GAS LANTERNS OR TORCHES. IF GAS LINES ARE BROKEN, AN EXPLOSION MAY OCCUR. DO NOT REENTER THE HOUSE UNTIL YOU ARE TOLD IT IS SAFE TO DO SO.

B. FUEL OIL OR PROPANE

Fuel oil or propane tanks may have floated during a flood and connecting pipes may be broken. Even underground tanks may float. Turn off the fuel valve at the tank and check for leaky pipes. If you find a leak or if you are not sure that the system is safe, call a professional and notify the fire department.

C. ELECTRICITY

If flood water has entered your home, the electrical system will need to be thoroughly checked and repaired. Remember when working around electricity, it is important to wear rubber gloves and rubber soled boots. Rubber is an insulator and will help protect you from shocks. Ideally this work should be done by an electrician. Disconnect the main electric switch and any other switches controlling electricity in outbuildings. If the main switch is

in the basement, be sure that the area around the switch box is dry before working.

Consult your electric utility company before using power in your home.

3. CARBON MONOXIDE EXPOSURE

Often during a flood clean up, gas powered pumps or heating devices are used. These should only be used in well ventilated areas. Carbon monoxide is colorless, odorless, and tasteless; you cannot tell if there is carbon monoxide present without a monitor. The symptoms of poisoning headache and nausea may seem similar to the flu. If you have these symptoms, leave the area immediately and call emergency personnel. Affected individuals should be led to fresh air and provided oxygen, if necessary. Follow standard first-aid practices: Keep victims warm and quiet until help arrives.

4. LEAD AND ASBESTOS EXPOSURE

The extensive renovation that occurs following a flood may expose the homeowner to dangerous levels of asbestos and lead from lead-based paints. The best way to avoid this kind of hazardous exposure is to contact licensed contractors to remove asbestos and lead from the home.

If homeowners plan to clean up, their homes follow the guidelines below:

LEAD

> Protect food, clothing, and every item in the house from the dust.

> If possible, remove and replace lead painted trim.

> **DO NOT USE PAINT STRIPPER CONTAINING METHYLENE CHLORIDE TO REMOVE THE PAINT**.

> **DO NOT EAT, DRINK OR SMOKE IN THE WORK AREA.**

> Seal the work area from the rest of the house.

> Wear protective clothing and an air purifying respirator.

> Cover the carpets with heavy plastic and seal the edges with tape.

> Place a damp floor mat. outside the door to a work area to collect the dust from the shoes.

> Use an exhaust window fan with an improvised filter.

> wash all surfaces with a solution containing trisodium phosphate or a phosphate free lead dissolving detergent. Collect wash water with a wet vacuum.

> Wash all surfaces after 24 hours again.

> The removal of lead-based paint using heat guns or torches, sand or water blasting, and dry sanding are prohibited.

If you need more information call the Ohio Department of Health, Lead Program at 614-466-0061

ASBESTOS

> Asbestos is a mineral fiber. There are several types of asbestos which can be identified with a special microscope.

> Breathing high levels of asbestos may cause lung cancer, a cancer of the lining of the chest and abdominal cavity (Mesothelioma), asbestosis, in which the lungs become scarred with fibrous tissue. If disturbed, asbestos material may release asbestos fibers, which can be inhaled in to the lungs. These fibers can remain in lungs for long time and that increases the risk of disease.

> Some of the common products that might have contained asbestos in the past (until 1970) are such as *steam pipes, boilers, furnace ducts, resilient floor tiles (vinyl asbestos, asphalt and rubber), cement sheet, millboard and paper, door gaskets, sound proofing or decorative material, patching and joint compounds for walls and ceilings, textured paints, asbestos cement roofing, shingles/siding, artificial ashes and embers, fireproof gloves, stove- top pads, ironing board covers, hair dryers, automobile brake pads and linings, clutch facings and gaskets, etc.*

ASBESTOS DO'S AND DON'TS FOR THE HOMEOWNER

> Do keep activities to a minimum in any areas having damaged material that may contain asbestos.

> Do take every precaution to avoid damaging asbestos material.

> Do have removal and major repair done by people licensed to perform asbestos work. It is highly recommended that sampling and minor asbestos repair work also be done by licensed professionals.

> Don't dust, sweep, or vacuum debris that may contain asbestos.

> Don't saw, sand, scrape, or drill holes in asbestos materials.

> Don't use abrasive pads, brushes, or power strippers to strip wax from asbestos flooring. Never use a power stripper on a dry floor.

> Don't sand or level asbestos flooring or its backing. When

asbestos flooring needs replacing, install new floor covering over it, if possible.

> Don't track material that could contain asbestos through the house. If you can not avoid walking through the area, have it cleaned with a wet mop. If the material is from damaged area or if a large area must be cleaned, call an asbestos licensed professional.

If you have any questions and need more information you may call the Ohio Department of Health, Asbestos Program at 614-466-0061.

5. CHEMICALS AND PESTICIDES

Chemicals and pesticides are not generally considered to be a problem because of the dilution which occurs. However, if you are aware of contamination of the flood waters with pesticides or chemicals from your farm or business notify the OEPA spill hotline at ***1-800-282-9379.***

Nitrates in drinking water may be a problem during spring flooding. Infants are more sensitive to nitrates than adults and older children. Be aware of advisories that may be issued for drinking water in flooded areas. When in doubt use only ready made formula and prepared foods or use bottled water.

IF YOU HAVE ANY QUESTIONS OR CONCERNS PLEASE CALL, OHIO DEPARTMENT OF HEALTH, BUREAU OF ENVIRONMENTAL HEALTH AND TOXICOLOGY AT 614-466-5599 FOR FURTHER INFORMATION.