

**JOINT ORDER OF THE MINISTER OF HEALTH AND GENERAL
DIRECTOR OF THE NATIONAL EMERGENCY MANAGEMENT
AGENCY OF MONGOLIA**

11 January 2011

No.07/27

Ulaanbaatar city

Endorsement of Guideline

Based on the articles 5.1, 5.2.1 and 5.2.4 of Occupational Safety and Hygiene Law and article 5.8 of the Health Care Waste Management Strategy, adopted on September 9, 2009, by the 293rd Order of the Minister of Health, it has been ordered:

1. To endorse the "Regulation on safety operations with mercury-containing health care equipment" as Annex I and "Regulation on response action during mercury spill from breakage of equipment in health care organizations" as Annex II.
2. To authorize The Public Health Care Policy Implementation and Coordination Department of Ministry of Health (S.Tugsdelger), directors of corresponding organizations and city and provincial health care departments and the Emergency Management and Coordination Department of the National Emergency Management Agency (B.Mandakhgerel) to ensure the actualization of the this order.
3. To authorize directors of the corresponding organizations and city and provincial health care departments to register all cases of mercury leakage and releases from mercury-containing health care equipment, and inform the recorded cases to Ministry of Health and National Emergency Management Agency by January 10 of each year.
4. To ban further procurement of the mercury containing thermometer, sphygmomanometer and dental amalgam, beginning January 15, 2011 and to authorize directors of the corresponding organizations and city and provincial health care departments and managers of all level health care organizations to take measures to reduce the use of mercury containing medical equipment and replace them with mercury-free alternatives.
5. To authorize the Department of Information, Monitoring and Evaluation of Ministry of Health (S.Enkhbold) and Disaster Preparedness Division of National Emergency Management Agency (high commissioner S.Tsogtbaatar) to monitor the implementation process of this order.

MINISTER OF HEALTH

S.LAMBAA

GENERAL DIRECTOR OF NATIONAL
EMERGENCY MANAGEMENT
AGENCY

TS. AMGALANBAYAR

Guideline on safety operations with mercury containing medical devices

Chapter I. General rationale

1. The guideline aims to provide information on safety operations with mercury containing equipment;
2. The safety operations guideline must be strictly followed by all medical officers and staff;

Chapter II. Safety measurements

1. During work with mercury-containing equipment one should be careful and strictly follow the safety operational procedure;
2. Staff required to operate mercury-containing equipment must be trained about characteristics and toxicity of mercury and prevention, clean-up and safe handling methods of mercury;
3. Prior operating mercury containing equipment and devices for treatment and screening, personnel need to read and study well its operation manual and strictly follow the safety operation requirements.
4. Inventory list of mercury containing health care equipments and devices (thermometer, sphygmomanometer, esophageal dilators and feeding tubes, some laboratory chemicals, vaccine and eye/nasal dropper, dental amalgam, battery, fluorescent lights, etc;) must be regularly maintained and checked.
5. To obtain practical experience of preparing mercury neutralizing solution such as potassium permanganate, iron chloride etc, according to the preparation method;

6. Workshop floor for mercury-containing equipment must not have any holes and be prohibited of covering, which allows penetration and spill of mercury in case of release.

7. Mercury-containing equipment operation manual and safety rules in workplace must be written clearly and vividly and placed near to the devices together with warning signs;

8. Mercury-containing equipment must be placed in plastic containers in ventilated room as preventing from the possible damage and leakage

9. Immediate action plan in case of damage and break caused spillage of mercury from the health care equipment must be developed and a list of the required reagents and chemical substances must be developed and maintained regularly.

10. Passport for utilization of medical devices must be recorded and medical devices must be repaired constantly;

11. Mercury spill cleaning kit per 20 beds must be supplied and placed in nurses' room. This cleaning kit must be under the infection control committee. The mercury cleaning kit must be included from following items:

- a. Soft hair brush
- b. Sealed plastic container, with thick wall
- c. Rubber gloves
- d. Enamel thick paper
- e. Glass tube, eye dropper, syringe without needle
- f. Zipper plastic bag
- g. Mercury collecting complex equipment
- h. Face protection mask
- i. Sticker (30 cm long) and tape

- j. Flashlight
- κ. Sulfur or zinc powder

12. The staff required to operate mercury-containing equipment needs to undergo pre-employment health screening (blood and urine test), regular medical screening once in every six months and before reclusion. If mercury level in urine is more than 0.02 mkg/l, or total level of mercury in urine is more than 200 mkg/l, the employer need to identify the source of mercury contamination.

13. In case of mercury spillage caused from damage and break of mercury-containing equipments, detoxication and neutralizing procedures must be performed by team nominated by professional organization based on conclusion of professional body.

14. Personnel that violate the safety operation rules shall be liable regarding the relevant laws.

2nd Annex of the Joint Order of
Minister of Health and General
Director of National Emergency
Management Agency dated 11
January 2011

Guideline on response to mercury spillage and release caused from damage and breakage of mercury-containing equipment in health care facilities

Article one. General justification

1. Aim of this guideline is to provide required actions in case of mercury spill from breakage of mercury-containing equipments in health care facilities.
2. The guideline must be strictly followed by the medical officers and staff;
3. Contaminated areas with mercury caused by breakage of the mercury containing equipment shall be is classified into two categories;
 - **Small spill:** it appears from breakage of thermometer, sphygmomanometer containing 1-3 gram of mercury and releases into broken area and surrounding area. In this case mercury contaminated area is located in one room or approximately less than 50 m² areas;
 - **Large spill:** it appears from breakage large mercury-containing equipments, mercury contamination spreads in several rooms, buildings, car or area of contamination can be covered more than 50 m² areas.

Article two. Safety measurements

- 2.1. **Mercury spill guidance caused by breakage of thermometer and sphygmomanometer**

1. Evacuate all people from the room and close the doors. Shut off central heating and cooling units to avoid spreading vapors to other rooms.
2. Never use a vacuum cleaner, mop or broom to clean up a mercury spill and put in sewage system.
3. Medical workers should consider the following rules when cleaning up a mercury spill:
 - Take off metal items like jewelry, bracelets, earrings, watches and rings since they can be permanently damaged by mercury
 - In order to avoid inhalation of mercury vapor wear a mask and put on rubber gloves. As the mercury contaminated clothes should be discarded put on old clothes, old shoes.
4. When wood, ceramic surfaces are easy to clean, thus porous surfaces, carpet, fabric, curtains must be difficult to clean. So remove them from the room and give to National Emergency Management Agency.
5. Carefully pick up the larger pieces of broken glass and place it in a plastic bags with zip-locks. After defining the location of mercury beads, use stiff cardboard to make smaller pieces of mercury beads together in bigger one. Shine a flashlight at an angle to locate small beads of mercury. The beads will reflect light from the flashlight. Check a wide area beyond the spill, because mercury beads spreads in long distance at the flat surface.
6. Suck a big mercury beads by syringe without needle, eyedropper or tube and place them in the plastic container with water. Close the container tightly and place it in the plastic bags with zip-lock. After removing big mercury beads collect very small drops with adherent paper and place it in the plastic bag with zip-lock. Powder sulfate or zinc makes the mercury in black color so that you can use it to see small drops. Avoid inhaling powder sulfate or zinc.
7. Carefully collect the broken glass, sharps, wrap up in a paper and place them in the zipper type plastic bag. Label on the plastic bags should contain the following items: "Mercury containing waste", date, and medical personal name.
8. Never use mercury contaminated gloves, clothes, shoes and other materials again. Do not wash in washing machine and burn mercury contaminated items. Place all used clothes and materials in the water proof bags and label properly.
9. Inform the health care waste management officer about mercury spill from breakage of medical equipment and transfer the labeled mercury waste to professionals of National Emergency Management Agency.

10. Do not use a vacuum cleaner for 1-2 weeks after clean up the mercury spill room.
11. After successful clean up the mercury spill open the windows and ventilate for 24 hours. Analyze the mercury content in room air by professional laboratories. If mercury concentration in the room air is less than $1\text{mg}/\text{m}^3$, the result of the cleaning process could be considered as properly done. If any symptoms of mercury intoxication occur in medical personals, physicians call to the emergency toxicology or emergency service center immediately.
12. The health care waste management officer should register any cases of mercury spill, location, date and clean up worker and keep the records of activities.
13. All mercury wastes should be given to the National Emergency Management Agency.

2.2. **Guideline on mercury response action during large mercury contamination**

1. Evacuate all people from spill area and close the doors. Place the warnings sign: "Warning, Hazard. Toxic area" on the door.
2. Call to NEMA phone 105 and inform urgently. Clean the contaminated room or areas with special trained personnel.
3. Shut off central heating and cooling units to avoid spreading vapors to other rooms.
4. Never use a vacuum cleaner, mop or broom to clean up a mercury spill and put in sewage system.
5. If mercury spill room have wooden floor with big groove, if required, clean up the room after removing the floor.
6. If mercury concentration in the air of the mercury spilled room is more than $1\text{mg}/\text{m}^3$ it would consider as mercury contaminated and special trained person with personal protection clothes should enter the room and collect all big and small mercury beads using special equipment and spray the room wall, floor and ceilings with 20% of potassium permanganate solution or 10% of ferrum (III) choric acid solution and cover the floor with sand for 2 hour. Then pick up the sand and clean up with cold water 3 times.
7. Heat the cleaned room with closed door and window until 30°C for 4 hours using electric heater and measure mercury concentration in the room air again by professional trained personnel.

8. If concentration in the room air is less than $1\text{mg}/\text{m}^3$, the results of the cleaning process could be considered as well done and the doors, windows should be opened and ventilated for some period of time. If the mercury concentration in the room air is more than $1\text{mkg}/\text{m}^3$ room should be sealed and decontamination procedures should be repeated.
9. If any symptoms of mercury intoxication occur in medical personnel, physicians call to the emergency toxicology or emergency service center immediately.
10. Analyze the room air by professional laboratories. If mercury concentration in the room air is not exceeded $1\text{mg}/\text{m}^3$, the result of cleaning process has been done well.
11. Never use mercury contaminated gloves, clothes, shoes and other materials again. Do not wash in washing machine and burn mercury contaminated items. Place all used clothes and materials in the water proof bags and label: "Warning. Mercury containing waste", date and medical personal name.
12. Sealed, labeled items should be given to professionals of National Emergency Management Agency and activities should be reported.
13. The health care waste management officer should register any cases of mercury spill, location, date and clean up worker and keep the records of activities.