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| Utarbeidet av AÅ<br>Godkjent av | Standard operasjonsprosedyre<br><b>Working with inhalational anaesthesia</b> | Versjon: 2,0<br>Utarbeidet: 17.12.2012<br>Revidert: 08.09.2014 |
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### 1. Purpose

This procedure shall secure a safe working environment for personnel working at Unit of Comparative medicine, and make sure no one is exposed to levels of inhalational anaesthetics above an acceptable level.

### 2. Responsibility

Head of unit is responsible of securing a safe working environment, and making all relevant procedures available at the unit.

All personnel must perform their work according to the procedures available, and notify the head of the unit if this is not possible.

### 3. Definitions

Inhalational anaesthesia: general anaesthesia achieved by breathing gaseous or volatile narcotic agents. At our unit, nitrous oxide, Isoflurane and Sevoflurane are used.

Nitrous oxide: commonly known as laughing gas, is a chemical compound with the formula N<sub>2</sub>O. Nitrous oxide is a weak general anesthetic, with analgetic effects. N<sub>2</sub>O can cause dizziness, euphoria, and some sound distortion. N<sub>2</sub>O is suspected of damaging fertility or the unborn child, and may cause damage to organs through prolonged or repeated exposure.

Isoflurane: a halogenated ether used for inhalational anesthesia. Isoflurane is always administered in conjunction with air and/or pure oxygen. Repeated exposure to halogenated anaesthetics has been linked to increased miscarriages in personnel in operating theatres.

Sevoflurane: sweet-smelling, nonflammable, highly fluorinated methyl isopropyl ether used for induction and maintenance of general anesthesia. After desflurane, it is the volatile anesthetic with the fastest onset and offset. Sevoflurane is the preferred agent for mask induction due to its lesser irritation to mucous membranes. In animal studies, reproductive effects like maternal toxicity, reduced fetal growth and fetal abnormalities are observed.

### 4. Education and training.

All personnel working with inhalational anaesthetics must read the safety sheet of the gases they are working with.

It is not allowed to work with inhalational anaesthetics without the necessary training. This training includes a laboratory animal course and local training, and should be documented at the unit.

Ask personnel at the unit if you feel you need more information on how to use the equipment.

### 5. Control of equipment.

Every anaesthesia machine should have an ID number visible on the machine.

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The equipment should be inspected before use. Look for damaged tubes or end connections. If you find something that does not look right, stop and ask personnel at the unit for help. The equipment should after being changed, moved or at least once a month be inspected for leaks using a leak detector. This inspection should be documented. Leak detector is available in a black box in the operation room SPF. If you suspect a leak, stop your work and contact the staff.

#### **6. General rules for working with inhalational anesthesia:**

- Inhalational anaesthetics should only be used in areas with acceptable ventilation.
- Inhalational anaesthetics should only be used with a coaxial mask and at a ventilated working table, if a risk assessment of the procedure does not lead to another conclusion.
- Use a heating pad to keep the body temperature of the animal at an acceptable level, but the pad must cover as little as possible of the ventilated areas on the table. The ventilated area must at all times be free close to the operator, to make sure waste gases are removed.
- Place other equipment away from the ventilated areas.
- Put the head of the animal properly inside the mask.
- Put the mask and the face of the animal at the edge of the heating pad, to make sure waste gases are removed.
- Make sure to switch the suction between the mask and induction chamber during your work, to remove waste gases.
- Do not use higher flow or concentration than necessary. If in doubt, look at the poster placed at the wall beside the machine for recommendations, or ask the staff.
- **If you are pregnant or are planning to get pregnant, we recommend that you don't work with inhalational anaesthetics.** Read the SOP for pregnant women, contact head of unit or your leader if you have any questions.

#### **7. Accidents**

- If inhaled, remove to fresh air until recovered. Give artificial resuscitation if breathing has stopped. Seek medical advice if any irritation develops or breathing stops.
- Wash contaminated skin and clothing with water for 15 minutes. Seek medical attention if irritation is present.
- If product comes into contact with eye, immediately flush with large amounts of running water for 15 minutes. Contact a physician.
- Spillage should be minimized at all times and cleaned up at once. Contaminated material should be removed and placed in a safety cabinet or a yellow box that is properly closed afterwards. Prevent liquid from entering sewers, waterways or low areas. Use appropriate personal protective equipment during cleanup. Restrict persons not wearing protective equipment from entering area until cleanup is complete. Ventilate area of spill or leak.
- All aberrations must be reported according to NTNUs system for aberrations, and also notified to head of the unit, in case the situation needs an immediate respond.