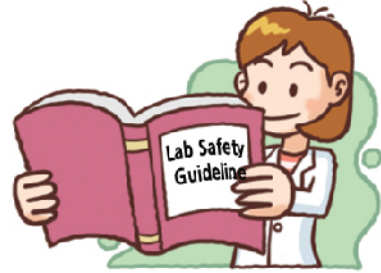


7. Semiconductor Research Field

We need investigation on hazardous effects of reagents and protection policy for women scientists and technicians in this field.



Protect Yourself!

You must be aware of the meanings of the "hazardous" (ignitable, explosive, corrosive, pollutant, biologically hazardous) of each substance in semiconductor field. Be careful not to be exposed to them and also evaluate their risk of exposure.

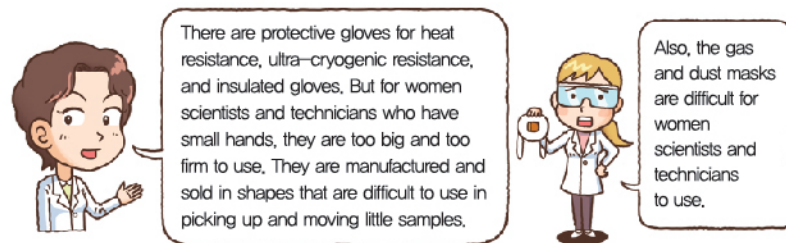
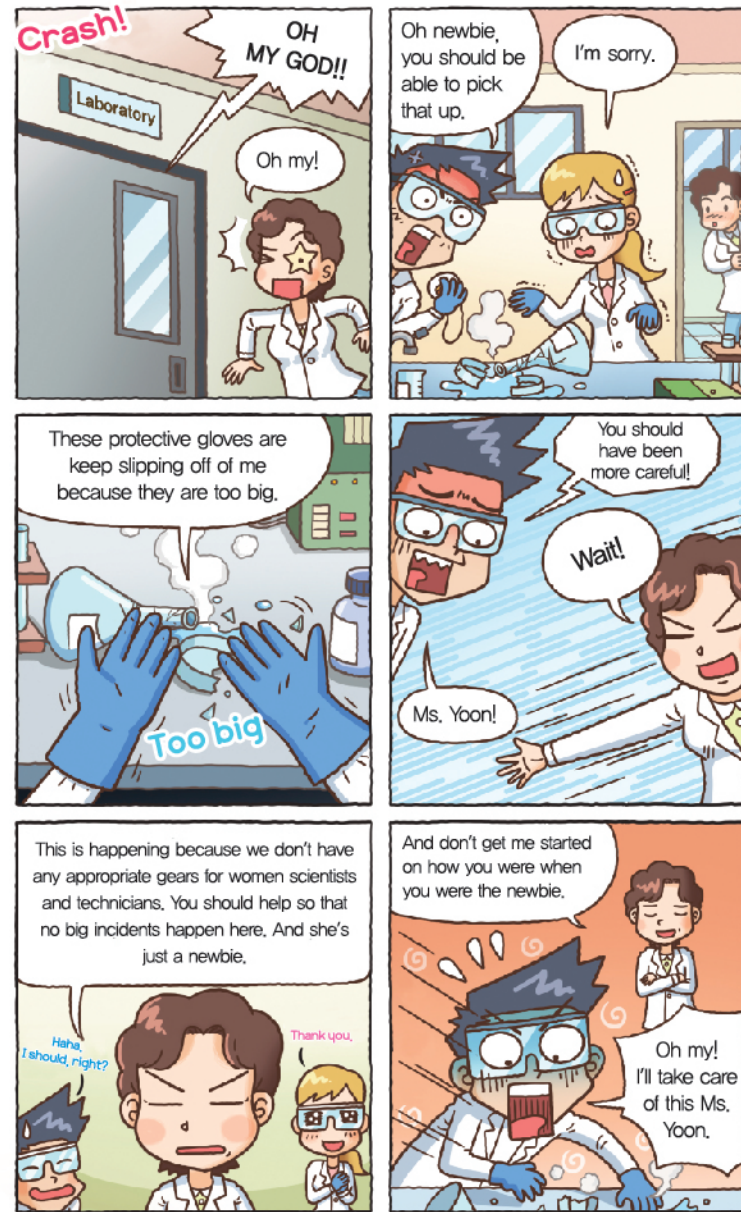
- 1 Choose less harmful substances for conducting experiments or research and choose the type of materials that is safer to handle (liquid type over powder)
- 2 Be aware of how to deal with harmful situations and how to dispose substances after use.
- 3 Do consult with a safety professional when in doubt and handle the material thereafter.

We need to pay more attention and care to the safety of women scientists and technicians as more and more women of childbearing age (fertile periods) are working in the field where they are exposed to hazardous materials.

We need to work together to provide a safe and pleasant laboratory environment for women scientists and technicians.

For more information on laboratory safety guideline for women scientists and technicians, please refer to [KOFWST's website at www.kofwst.org](http://www.kofwst.org)

Incident Case in the Laboratory



► Manuscript and design by
Laboratory Safety Management Committee for Women Scientists

KOFWST Since 2003 Korea Federation of Women's Science & Technology Associations

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Laboratory Safety Guideline for Women Scientists and Technicians



KOFWST Since 2003 Korea Federation of Women's Science & Technology Associations

Laboratory Safety Management Committee for Women Scientists

Safety points to remember during pregnancy and breastfeeding

Confirm with your doctor if you think you are pregnant and get a consultation about the health issues for you and your baby with type of harmful materials being used at the laboratory



Inform your boss, advisor, and safety professionals at the laboratory about your pregnancy

Request for a safety evaluation to your boss, advisor, and safety professionals at the laboratory to minimize the risk exposure to harmful substances



You may change your research method or schedule after being confirmed pregnant if your boss or your advisor approves

You may ask your boss or your advisor to be confidential about your pregnancy



Check if any of your on-going research protocols include harmful substances

Avoid severe exercise and be careful not to overwork in your early stage of pregnancy



Reduce any physical labor after 6 months of your pregnancy by 2/3

Try to take more breaks during the day after being confirmed pregnant



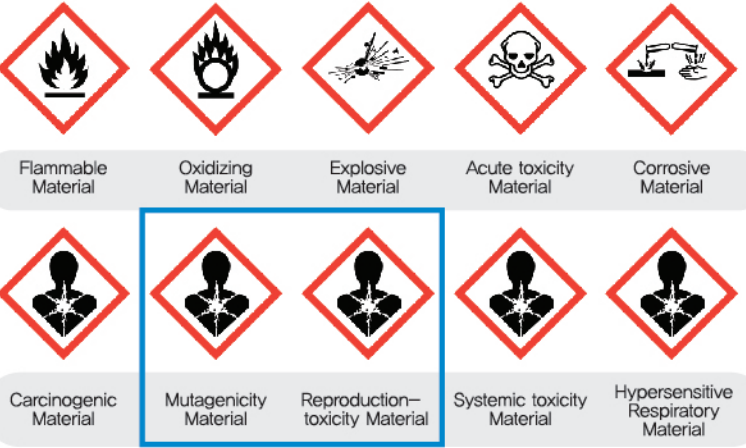
Let your radiation safety manager know of your pregnancy immediately as pregnant women are vulnerable to radiation exposure

1. Hazardous Chemicals

Be aware of labels of chemical substances and look up harmful effects of each chemical substance in use.

Know what each label stands for by looking up on MSDS (Material Safety Data Sheets) in advance where you can find safety information on each chemical substances being used in your laboratory.

Understand the GHS code (Globally Harmonized System of Classification and Labeling of Chemicals) which tells you about the harmful effect of each chemical substances.



1 Always use Korea Information System for Chemical Safety Management to check whether the chemical substances in your laboratory are either mutagenic (242 chemicals) or toxic to reproduction (410 chemicals).

- Korea Information System for Chemical Safety Management
<http://kischem.nier.go.kr>
- Chemiclas Information System
<http://ncis.nier.go.kr>
- Korea Occupational Safety & Health Agency
<http://msds.kosha.or.kr>
- Hazardous Substances Data Bank (HSDB)
<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>
- Chemical Identification Plus (ChemIDPlus)
<http://chem2.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

2 Women scientists and technicians should check in advance what type of chemical, medical and contagious materials that have mutagenic or toxic effect on reproduction system which could be exposed to them during their research experiment. Be aware of how to be careful and how to deal with harmful exposure during research or experiment in advance.

3 When dealing with chemical substances, please use appropriate safety equipments and be aware of physical and chemical properties of each chemicals in use. Know in advance special attention to when handling. Share relevant safety information with your research colleagues regularly.



2. Safety Management in Hospitals



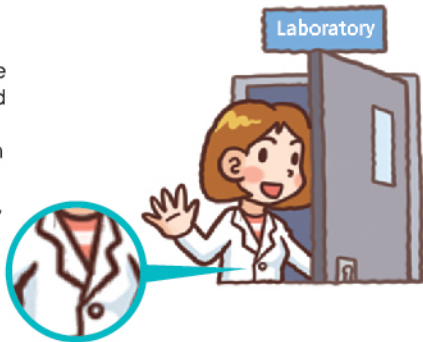
Although hospitals treat medical conditions and promote health related activities, women who work in the hospitals in their childbearing age are exposed to various harmful factors such as shift work, heavy materials handling, infectious diseases, occupational stress, and long working hours.

When working in a hospital, you must :

- 1 Always wear protective gears and follow instructions for infection prevention when treating patients with suspected infectious diseases.
- 2 Discuss with your supervisor about the working conditions (night shift and limited extra working hours) once pregnancy is confirmed.
- 3 Avoid heavy physical work, lifting and forceful movements, and awkward postures when handling patients with limited mobility on your own.
- 4 Get a medical examination on a regular basis.
- 5 Consult with your supervisor and health managers immediately to find proper solutions when occupational illness or injury is suspected.

3. Handling Medical Supplies

Reproductive Toxicity : Adverse effect on women's reproduction and sexual function or harmful effect on fetal growth and development, such as infertility, miscarriage, premature birth, stillbirth, menstrual irregularity, abnormal spermatogenesis etc.



Minimizing exposure to harmful substances is the most important task!

- Always use protective gears (mask, gloves)
- Always use the hood
- Store materials not in use in appropriate places
- Wash hands frequently (before meals, before drinking water, before using harmful substances, and immediately after touching them)
- Change clothes after experiment so that you don't carry any harmful substances home.

4. Safety Management of Biological Samples



Women scientists and technicians working with biological samples must be aware of Safety Guidelines about LMO (Living Genetically Modified Organism)

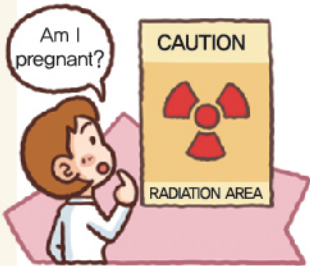
Women of childbearing age must be vaccinated to enhance their immunity and should take care of their personal hygiene by frequently washing hands etc.

- 1 Pregnant women who have not been vaccinated or have low level of immunity must avoid contact with anyone including children with infectious diseases.
- 2 Pregnant women or breast-feeding scientists and technicians should be careful not to be exposed to dangerous pathogenic agents in Hazardous Group 2, 3, 4 in order to prevent infections.

Checklist to prevent infections in the laboratory

- Education on safe transportation, storage, and disposal of infectious samplest
- Examination of protective laboratory clothing and gloves
- Perfect disinfection of samples and equipments and proper use of sanitization

5. Safety Rules in Radiation Controlled Areas



Radiation workers should abide by access protocols and safety rules in Radiation Controlled Areas!

Currently we know that the exposure to radiation less than 100mSv per year does not cause cancer.

- 1 We should improve the working environment for pregnant women scientists and technicians so that they are not exposed to radiation more than 1mGy. However, we do not need to ban their access and work in Radiation Controlled Areas.
- 2 Radiation exposure less than 100mSv does not justify artificial abortion. Exposure of 100–500mSv may be taken into account but decisions should be made according to the maternal health. Radiation exposure of more than 500mSv may indicate fetus damage.

Reference

The maximum permissible dose of radiation exposure for radiation workers is less than 50mSv per year but should not exceed total of 100mSv in 5 years.

- Permissible annual dose of radiation exposure to a member of general public: 1mSv
- Dose of radiation exposure for every chest X-ray examination: 0.3~1mSv
- Dose of radiation exposure for every round trip to USA via airplane: 0.1mSv

6. Safety Management on Construction Sites



The field of construction is divided into planning and building, however, since the working environment and most of the gears are made for men, improvements considering female workers should be made.

Construction Planning

- 1 Strict guideline for smoking area should be made in order to reduce the danger of exposure to second-hand smoking near the entrance of buildings where restriction to smoking is not applied as indoors.
- 2 Improvement should be made to the vertical mouse used in the industry for computer work, as it is uncomfortable for women with small hands to use them.
- 3 Inform your supervisor and teammates to adjust your night work schedule when carrying a baby.

On Construction Site

- 1 New gears (head gear and protective shoes) and equipment should be made with consideration of women's physicality, as the conventional standard of size is big.
- 2 Portable toilets available on construction sites are mostly unisex, however, it is uncomfortable for both men and women without separate booths. Request to have separate toilets made for each sex.
- 3 Keep away from high heels and loose clothing in order to prevent injuries and for prevention of incidents when visiting or working on constructions sites.
- 4 Always wear head protection gear on site at all times even during short visits.