1. General

Secondary containments are sealing platforms intended for the safe storage of liquid hazardous materials (HazMat), acids, bases, and oils. They serve as a primary defense against leaks and the spread of harmful substances into the environment. Additionally, in the event of a spill involving flammable liquids, they help to limit the extent of evaporation and spreading, thus reducing the risk of ignition or environmental contamination (e.g. drinking water, sewage, etc.).

2. Objective

2.1. To clarify and uphold the legal requirements in Israel regarding the storage of hazardous liquid materials in secondary containments.

2.2. To describe and regulate the compliance and maintenance of various types of secondary containments used at the institute.

3. Responsibilities and implementation

3.1. Heads of research groups (PIs), faculty scientists, and visiting scientists.

3.2. Heads of units, administrative or technical managers.

3.3. Employees.

3.4. Graduate students (M.Sc, Ph.D) and postdoctoral researchers, including visiting students.

3.5. The Safety Unit – serving as the professional training, advisory, and auditing body.

4. Definitions

4.1. **Secondary containment** – Secondary containment is any form of outer container or structure capable of holding the contents of a primary container in the event of a chemical release or accidental spill.

4.2. **Hazardous materials permit (toxins permit)** – A permit issued by the Ministry of Environmental Protection Department that authorizes an entity to carry out any activity involving hazardous materials (defined as toxins), including scientific activity, manufacturing, purchasing, and sales.

4.3. **Hazardous Materials Law (1993)** – This law requires any person working with hazardous materials (e.g. all types of organic solvents) to hold a HazMat permit from the Israeli Ministry of Environmental Protection Department, which outlines the approved substances and specifies how to store, use, label, and handle them. The permit holder must prevent any hazardous material from entering wastewater systems or soil and from being released into the air. Accordingly, the permit mandates the use of secondary containments and outlines the requirements for their operation and maintenance. See reference 7.4 – Ministry of Environmental Protection Q&A document regarding hazardous materials storage in secondary containments.

4.4. **Types of secondary containments:**

At the Weizmann institute, there are four types of secondary containments used to handle uncontrolled spills of hazardous materials:

4.4.1. **Small integral secondary containments** (up to 10 liters), located in laboratory storage cabinets and drawers. Sometimes, sealed drawers with high walls located beneath a chemical hood function as secondary containments, if they are resistant to the solvents or chemicals stored within.

4.4.2. **Small mobile secondary containments** (up to 8 liters), placed in drawers without integral secondary containments.

4.4.3. **Medium mobile secondary containments** (up to 20 liters), located in warehouses, machine rooms, etc.

4.4.4. **Large stationary secondary containments** to contain hazardous material from tanks with volumes ranging from 500-3,000 liters (e.g. Diesel, Sodium hypochlorite, Hydrochloric acid), distributed throughout the institute.

4.5. **Characteristics of secondary containments and sizes:**

4.5.1. The secondary containment must be intact, sealed, free of cracks, clean, dry, and chemically resistant to the toxins or hazardous waste stored within, ensuring no leakage to the environment.

4.5.2. The free volume of secondary containment must be at least 110% of the largest vessel/tank's volume placed in it.

4.5.3. Mobile secondary containments in laboratories are made of Polyethylene or Polypropylene.

4.5.4. Integral secondary containments are made of various materials (Formica, Trespa, or stainless steel) depending on the type of hazardous materials that the drawers are intended to store.

4.5.5. Large stationary secondary containments are made of materials suitable for the tank contents.

5. Method

5.1. **Storage Guidelines:**

5.1.1. HazMat handlers at the Weizmann institute (laboratory staff, administrative staff, etc.) must not store hazardous materials from different hazard groups (acids, bases, etc.) in the same secondary containment. Mixing different groups of hazardous materials may result in chemical reactions, releasing dangerous substances, including toxic or flammable gases, or leading to exothermic reactions, explosions, or fires.

5.1.2. It is the responsibility of HazMat handlers to ensure that stationary secondary containments are stored under cover or shade and protected from direct sunlight and rainwater.

5.1.3. HazMat handlers must ensure that rainwater entering the secondary containment is immediately drained, absorbed, or pumped out, unless weather conditions prevent it.

5.1.4. In the event of a spill, laboratory or service unit staff must ensure that materials emptied from the secondary containment or drainage channels during the removal process are disposed of according to the legal requirements, in a way that completely prevents environmental contamination, and in accordance with the safety unit.

5.1.5. Labeling – All HazMat handlers must label containers holding hazardous materials/toxins as follows:

5.1.5.1. Small integral and mobile secondary containments in laboratories – must have label on the drawer/cabinet indicating the chemical hazard group, UN number, and emergency code.

5.1.5.2. Medium mobile secondary containments – a label near the secondary containment must indicate the chemical hazard group, UN number, and emergency code.

5.1.5.3. Large stationary secondary containments – a label near the secondary containment must indicate the chemical name of the stored toxin (in Hebrew or English), UN number, hazard group, and emergency code.

5.2. <u>**Maintenance of secondary containments:**</u>

Maintenance must be performed using Personal Protective Equipment (PPE), including safety glasses, gloves, lab coat, and closed shoes.

5.2.1. <u>Maintenance of integral secondary containments, mainly common in laboratories:</u>

Maintained by users (lab workers). It is their responsibility to ensure the secondary containments (or containment drawers) are intact, clean, and crack-free always. If a secondary containment is unclean, users will:

- ✓ Empty the secondary container of chemical bottles stored in it.
- ✓ Check that the container is intact, free of damage or corrosion.
- ✓ Clean the container with a damp cloth.
- ✓ Dry the secondary container and return the chemical bottles to be stored.

5.2.2. <u>Maintenance of mobile secondary containments, common in the institute:</u>
Maintained by users (lab workers). It is their responsibility to ensure the secondary containments (or containment drawers) are intact, clean, and crack-free always. If a secondary containment is unclean, users will:

- ✓ Empty the secondary container and rinse it with running water.
- ✓ Check that the container is intact, free of damage.
- ✓ Dry the container and return it to the storage drawer or cabinet.

* If visible chemical residues are present, they must be cleaned with absorbent paper and disposed of in a labeled chemical waste bag (together with contaminated gloves, paper, etc.).
** Safety Unit representatives will perform periodic documented inspections in each lab, including random sampling of secondary containments. In case of non-compliance, the lab will be given up to one month to correct the issue, followed by a re-inspection.

5.2.3. <u>Maintenance of medium mobile secondary containments:</u>
Maintained by a designated department representative, who ensures they are always clean, intact, and crack-free.

5.2.4. <u>Maintenance of large stationary secondary containments across the institute:</u>
Maintained monthly by a designated departmental representative (operations team leader). Maintenance is logged in a computerized system.

5.2.5. Stationary secondary containments inspected by external companies (e.g. water reservoir facilities). Inspections verify secondary containment integrity, functionality of drainage mechanisms, and condition of seals.

* The safety unit ensures that all relevant units at the institute perform inspections of large secondary containments and that these are documented in the computerized system by facility operators or other authorized personnel.

6. Table of versions and revision history

Procedure No.	***Version***	***Date***	***Changes and Updates***	***Signature***
WISc000005	*01*	*05/01/2025*	*First version*	First version in Hebrew was translated to English by Dr. Itzhak Ergaz
WISc000005-2	*02*	*28/05/2025*	*Second version*	The Safety Unit: Dr. Itzhak Ergaz Sali Grizuk

7. References

7.1. Hazardous Substances Law (1993) - **https://www.gov.il/BlobFolder/legalinfo/hazardous_law_1993/he/hazardous_materials_hazardous_law_1993.pdf**
7.2. WIS's hazardous materials permit (version 2024-2026)
7.3. The Israel Institute for Occupational Safety and Hygiene – Legal requirements regarding secondary containments - **https://www.osh.org.il/uploadfiles/tshuva010310.html**
7.4. Ministry of Environmental Protection – Q&A document regarding hazardous materials storage in secondary containments (2017) - **https://www.gov.il/BlobFolder/guide/toxins_permit/ar/hazardous_materials_maatserot_faq2017.pdf**

8. Appendices

N/A