McMaster University

Risk Management Manual Program

Complete Program Title: **Hand Protection Program**	Risk Management Manual (RMM) Number: **321**
Approved by: **Vice-President, Administration** **President and Vice-Chancellor**	Date of Most Recent Approval: **June 2013**
Date of Original Approval: **October 2007**	Supersedes/Amends Program dated: **June 2010**
Responsible Executive: **Vice-President, Administration**	Enquiries: **Environmental and Occupational Health Support Services (EOHSS) eohss@mcmaster.ca**
DISCLAIMER: *If there is a discrepancy between this electronic program and the written copy held by the program owner, the written copy prevails.*	

1 Purpose

1.1 To reduce the potential for skin and hand injury and to ensure compliance with the Occupational Health and Safety Act and Regulations, and codes and standards regarding hand protection.

1.2 This program provides guidance, based on the risk of a task, for the selection of protective gloves to be worn. The program is in effect for all staff, faculty, students, volunteers, and visitors who may be at risk from any procedure performed on McMaster University controlled property.

2 Scope

2.1 All individuals at risk of hand injury while performing a task associated with work, research or study.

3 Related Documents

3.1 Laboratory Safety Handbook by the Chemical Institute of Canada

3.2 McMaster University Risk Management Manual #100 Workplace and Environmental Health and Safety Policy

3.3 McMaster University Risk Management Manual #309 Laboratory Safety Handbook

3.4 McMaster University Risk Management Manual #324 Job Hazard Analysis Program

3.5 Ontario Occupational Health and Safety Act of Ontario, Industrial Establishment Regulations R.S.O. 1990

3.6 Safety in Academic Chemistry Laboratories by the American Chemical Society

3.7 Workplace Electrical Safety, CSA Z462-08

4 ACRONYMS:

CJHSC – Central Joint Health and Safety Committee

CSA – Canadian Standards Association

EOHSS – Environmental and Occupational Health Support Services

FHSc safety office – Faculty of Health Sciences Safety Office

JHSC – Joint Health and Safety Committee

OHSA – Occupational Health and Safety Act / Industrial Regulations R. S. O. 1990

SOPs – Standard Operating Procedures

5 Definitions

5.1 **Job Hazard Analysis –** method to evaluate common hazards in the work environment. The main activities involved with each job title are listed and a sequence of tasks is developed along with each associated hazard and control.

5.2 **Hand Protection –** personal protective equipment (gloves, mitts, etc.) or barrier creams used to protect hands from harm.

5.3 **Chemical Resistant Gloves –** gloves that provide an effective barrier against specific chemicals. An appropriate chemical resistant glove must demonstrate no significant degradation, a high breakdown time, and low permeation rate upon contact with the chemicals used.

5.4 **Non Conductive Gloves –** gloves that protect against transmission of electricity.

5.5 **Non Permeable Gloves –** gloves that protect against a specific hazard moving through material. No glove is non permeable for all substances.

5.6 **Degradation –** is a measurement of the physical deterioration of the material due to contact with a chemical. The material may get harder, stiffer, more brittle, softer, and weaker or may swell. The worst example is that the material may actually dissolve in the chemical.

5.7 **Breakthrough Time –** the time it takes a chemical to permeate completely through the material. It is determined by applying the chemical on the glove exterior and measuring the time it takes to detect the chemical on the inside surface. The sensitivity of the analytical instruments used in these measurements influence when a chemical is first detected. The breakthrough time gives some indication of how long a glove can be used before the chemical will permeate through material.

5.8 **Permeation Rate –** the rate at which the chemical will move through the material. It is measured in a laboratory and is expressed in units like milligrams per square meter per second (or some other [weight of chemical] per [unit areas of material] per [unit of time]). The higher the permeation rate, the faster the chemical will move through the material.

Permeation is different from penetration. Penetration occurs when the chemical leaks through seams, pinholes and other imperfections in the material; permeation occurs when the chemical diffuses or travels through intact material.

Reusable Gloves **–** only gloves that are not used to protect from chemicals such as those that protect from cuts, electric shock, and cold are considered reusable.

5.9 **Supervisor –** Person who has charge of a workplace or authority over a worker.

5.10 **Worker –**person who performs work or supplies services for monetary compensation.

6 Responsibilities

6.1 Role of Senior Managers (Deans Chairs, Directors)

Senior Manager Shall:

- provide the direction and resources necessary to support the Hand Protection Program; and
- ensure that the staff under their direction are aware of and abide by this program.

6.2 Role of Supervisors

Supervisors shall:

- perform a JHA Assessment to determine the appropriate hand protection required by individuals working in or accessing areas under their supervision;
- consult Material Safety Data Sheets (MSDS) where applicable;
- ensure the proper gloves are being worn, as required, while hazardous tasks requiring hand protection are being performed in consultation with the JHSC, prepare SOPs as required for non-routine hand hazards;
- review and approve SOPs as required for the prevention of skin contact or contamination; and
- where appropriate, post and enforce rules regarding hand protection requirements.

6.3 Role of Individuals (Faculty, Staff, Students, Visitors and Volunteers)

Individuals shall:

- wear the appropriate protective hand wear as prescribed by their Supervisor and/or Material Safety Data Sheet (MSDS);
- inspect hand wear prior to use;

- maintain their protective hand wear and report damage or breakage to their Supervisor for replacement; and
- not wear hand protection in public areas outside the specific work area.

6.4 **Role of Environmental & Occupational Health Support Services and FHSc Safety Office:**

EOHSS and FHSc safety office shall:

- provide assistance with hazard assessments; and
- provide advice on the selection of appropriate hand protection.

6.5 **Role of Joint Health and Safety Committee:**

JHSCs shall:

- review the effectiveness of the Hand Protection Program within assigned work groups as part of the workplace inspection process; and
- review SOPs required for non-routine hand hazards.

6.6 **Role of Central Joint Health and Safety Committee**

The CJHSC shall:

- review the Hand Protection Program on a scheduled basis

Appendix 1

Guide to the Selection of Skin Protection		
Hazard	**Degree of Hazard**	**Protective Material**
Abrasion	Severe	Reinforced heavy rubber, staple-reinforced heavy leather
	Less Severe	Rubber, plastic, leather, polyester, nylon, cotton
Sharp Edges	Severe	Metal, mesh, staple-reinforced heavy leather, Kevlar ™ aramid-steel mesh
	Less Severe	Leather, terry cloth (aramid fiber)
	Mild with delicate work	Lightweight leather, polyester, nylon, cotton
Chemicals and Fluids	Risk varies according to the chemical, its concentration, and time of contact among other factors. Refer to the manufacturer or product MSDS.	Dependent on chemical. Examples include: natural rubber, neoprene, nitrile rubber, butyl rubber, PTFE (polytetrafluoroethylene), Teflon ™, Viton ™, polyvinyl chloride, polyvinyl alcohol, Saranex ™, 4H ™ , Barricade ™, Chemrel ™, Trellchem ™
Cold		Leather, insulated plastic or rubber, wool, cotton
Electricity		Rubber-insulated gloves tested to appropriate voltage (CSA Standard Z259.4-M1979) with leather outer glove
Heat	High Temperatures (over 350 deg C)	Asbestos, Zetex ™
	Medium High (up to 350 deg C)	Nomex ™, Kevlar ™, neoprene-coated asbestos, heat-resistant leather with linings
	Warm (up to 200 deg C)	Nomex ™, Kevlar ™, heat-resistant leather, terry cloth (aramid fiber)
	Less Warm (up to 100 deg C)	Chrome-tanned leather, terry cloth
General Duty		Cotton, terry cloth, leather
Product Contamination		Thin-film plastic, lightweight leather, cotton, polyester, nylon
Radiation		Lead-lined rubber, plastic or leather

Note: The mention of trade name products in the above table is not intended as a recommendation or endorsement of any product. Check with your supplier or the manufacturer to find out if a particular glove meets your requirements. This list is not intended to be comprehensive; you may know of other products that meet your needs.

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