EMERGENCY

CALL **9-1-1**

FIRE POLICE AMBULANCE

OTHER EMERGENCY NUMBERS

Emergency First Aid **604-822-4444**
Hazardous Materials Response **911**
Campus Security **604-822-2222**
Poison Control Centre **604-682-5050**
UBC Hospital Urgent Caret Dep't **604-822-7222**

NON-EMERGENCY NUMBERS

Ambulance **604-872-5151**
Campus Fire Department **604-665-6010**
Health Safety and Environment **604-822-2029**
Rape Crisis Centre - W.A.V.A.W **604-255-6344**
RCMP - UBC Department **604-224-1322**
Student Health Services **604-822-7011**
(Mon, Tues, Wed, Fri – 8 am - 4 pm — Thurs 9 am - 4 pm)
Trouble Calls - Plant Operations **604-822-2173**
UBC Sexual Assault Information Line **604-822-9090**
Vancouver Fire Rescue Service **604-995-6000**

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INTRODUCTION

The management of the Pulp and Paper Centre at UBC is committed to providing its employees a safe and healthy workplace. To ensure that this objective is accomplished, management has developed and will maintain a department specific Occupational Health and Safety (OCHS) Program. An OCHS Program is defined as "*a scheme of action or a plan of future procedures for enlisting and maintaining support of all the personnel of the centre for the prevention of accidents*".

The Pulp and Paper Centre's OCHS Program contains twelve elements which meets the requirements of the University of British Columbia and WorkSafeBC of British Columbia. These elements include:

1. Safety Policy
2. Local Safety Committee
3. Orientation, Training and Supervision of Workers
4. Hazard Assessments and Work Site Inspections
5. Accident Investigations
6. Safe Work Procedures
7. First Aid and Emergency Services
8. Personal Security and Public Safety
9. Health Promotion and Return to Work
10. Records and Statistics
11. Program Review
12. Environmental Protection

The OCHS Program is documented in this Safety Program Manual which:

- describes the requirements of each element
- lists the names of individuals designated as being responsible for the various program elements
- outlines the roles and responsibilities of all levels of employment.

All department employees will be familiarized with this Manual to ensure that they are aware of their responsibilities and safe work procedures. The Manual will be reviewed and updated by the Departmental Safety Program Administrator (DSPA) and by the Pulp and Paper Centre's Local Safety Committee.

If there are any questions regarding the Safety Program Manual or the Pulp and Paper Centre's OCHS Program, please contact your safety committee representative or the DSPA (Mr. George Soong, 604-822-2530, E-mail: gsoong@mail.ubc.ca)

PULP AND PAPER CENTRE SAFETY POLICY

The safety of all faculty, staff, students and visitors to the Pulp and Paper Centre is of paramount importance. Our objective is to provide a safe and healthy working environment for all.

To prevent accidents and occupational injuries, we have established safety guidelines and procedures in accordance with UBC policy. We expect compliance from each and every individual to ensure the safety of all.

UBC SAFETY POLICY

THE UNIVERSITY OF BRITISH COLUMBIA'S SAFETY POLICY

The University aims to provide a safe, healthy and secure environment in which to carry on the University's affairs. All possible preventive measures are taken to eliminate accidental injuries, occupational diseases and risks to personal security.

Compliance with the Workers' Compensation Act, WHMIS and related legislation is the minimum standard acceptable. All students and members of faculty and staff are encouraged to strive to exceed these minimum legal standards

The University

It is the responsibility of the University acting through administrative heads of unit to:

- provide a safe, healthy and secure working environment;
- ensure regular inspections are made and take action as required to improve unsafe conditions;
- ensure that health, safety, and personal security considerations form an integral part of the design, construction, purchase and maintenance of all buildings, equipment and work processes;
- provide first aid facilities where appropriate;
- support supervisors and safety committees in the implementation of an effective health, safety and security program;
- ensure compliance with WCB/WORKSAFE BC and other applicable legislation;
- establish department or building safety committees;
- communicate with the university community or affected groups about events or situations when potentially harmful conditions arise or are discovered;
- ensure adequate resources are available to implement appropriate procedures.

The Supervisor

It is the responsibility of supervisory staff to:

- formulate specific safety rules and safe work procedures for their area of supervision;
- ensure that all employees under their supervision are aware of safety practices and follow safety procedures;
- provide training in the safe operation of equipment;
- inspect regularly their areas for hazardous conditions;
- correct promptly unsafe work practices or hazardous conditions;
- be responsive to concerns expressed about personal security and investigate any accidents, incidents or personal security concerns which have occurred in their area of responsibility;
- report any accidents or incidents involving personal security to the appropriate University authority;
- participate, if requested, on department or building safety committees.

Individual Students and Members of Staff and Faculty

It is the responsibility of individual students and members of faculty and staff to:

- observe safety rules and procedures established by supervisory staff, administrative heads of unit and the University;
- be safety-conscious in all activities, be they work, study or recreation;
- report as soon as possible any accident, injury, unsafe condition, insecure condition or threats to personal security to a supervisor or administrative head of unit;
- use properly and care for adequately personal protective equipment provided by the University;
- participate, if elected or appointed, on departmental or building safety committees.

THE UNIVERSITY OF BRITISH COLUMBIA'S ENVIRONMENTAL PROTECTION COMPLIANCE POLICY

UBC will act responsibly and demonstrated accountable management of the property and affairs of UBC in protecting the environment. All individuals in the University community share the responsibility for protecting the environment. Administrative heads of unit are responsible for ensuring compliance with legislation and UBC procedures both on and off campus

The Purpose of the U.B.C. Environmental Protection Compliance Program is to:

- provide a formal statement of commitment in response to global and local concerns regarding environmental protection;
- provide a framework for establishing procedures that will ensure consistent response to environmental issues, and demonstrate responsibility and due diligence on the part of the University;
- develop auditing and monitoring procedures which are effective for a university setting;
- ensure compliance with all applicable environmental regulations at all sites of University activity;
- meet all legislated requirements as a minimum standard;
- provide communication and education about environmental issues;
- provide a platform for sustainable development efforts at UBC.

The Responsibility of the University acting through Administrative Heads of Unit is to:

- ensure communication about the goal of compliance with environmental legislation with all persons working or studying at the university
- provide appropriate training of all persons working or studying at UBC in relevant environmental issues and procedures for recognizing, dealing with and reporting accidents that affect the environment
- notify individuals, when potentially harmful conditions arise or are discovered, who might be affected and keeping them aware of efforts to correct the situation
- develop plans to deal with all identified deficiencies into compliance with regulations in consultation with the Manager of Environmental Programs
- ensure that monitoring is carried out in accordance with established systems.
- ensure compliance with legislation and UBC procedures both on and off campus.

The Responsibility of Every Faculty, Staff and Student is to:

- follow established departmental procedures for the protection of the environment
- comply with all established environmental legislation
- report to their supervisor or administrative head of unit all accidents which may harm the environment
- participate, if elected or appointed, on departmental or university environmental committees
- apply for a certificate of environmental protection for any off campus activities that may impact the environment
- minimize environmental impact by participating in Reduce, Reuse, Recycle program

THE ROLE AND RESPONSIBILITIES OF THE DEPARTMENTAL SAFETY PROGRAM ADMINISTRATOR

The Director of the Pulp and Paper Centre has the primary responsibility for the safe and compliant operation of the department. This management function may be delegated by the Director to an M&P staff member who will act as the Departmental Safety Program Administrator (DSPA). The Director retains responsibility for the performance of the safety programs and the activities of the DSPA.

The role of the DSPA is:

1. Act with the authority of the Director in the day to day safety management of the department and act as the department liaison with the RMS Department.

2. Develop, maintain and oversee the distribution of the departmental safety Program Manual with the assistance of RMS staff.

3. Ensure that safe work procedures are developed and enforced.

4. Develop the safety inspection protocol for the department. Defining the inspection areas, preparing the inspection check sheets and developing reporting procedures.

5. Review all accident investigation reports and take preventative measures to prevent reoccurrence.

6. Facilitate the formation of the departmental safety committee by assigning management staff, facilitating the selection of worker representatives. Support the activities of the committee, monitor their effectiveness and on behalf of the Director, respond to committee recommendations.

7. Monitor the overall safety program performance, including inspection frequency, quality and corrective actions. Meet regularly with the Director to report activities and the status of the program.

DUE DILIGENCE

Due diligence means taking all reasonable care to protect the well being of all employees. To meet the standard of due diligence, the Department must take all reasonable precautions in the circumstances to carry out departmental work and safety and health responsibilities. This is the standard of care required to comply with the safety and health regulations and orders made under the BC *Workers Compensation Act* and enforced by the WCB/WORKSAFE BC of BC.

The courts will recognize a formal defence of due diligence in prosecutions. In practice, the WCB/WORKSAFE BC will also recognize a defence of due diligence and may relieve employers of monetary penalties for violations of the regulations-if employers can establish that they were duly diligent.

The following key steps are the basis for practicing due diligence:

Training and Supervision

Evidence that a worker attended a training session doesn't necessarily prove that the worker understood the training, nor does it prove that the worker intended to apply the training. The Department must take reasonable steps to ensure that the worker understood the training and is able to apply it successfully on the job. Supervisors should routinely monitor workers and correct unsafe work methods with instruction or refresher training as needed.

Never assume that a worker will be aware of a hazard because "it's common sense". Supervisors must bring every risk - even if it seems obvious - to the attention of the workers that are being supervised. An effective system of supervision is a key part of the due diligence standard.

Health and Safety Program

An ongoing OHS Program that controls specific hazards in the workplace may form the basis of a defence of due diligence.

If the Department can show that the OHS Program elements required by WCB/WORKSAFE BC regulations are in effect and working well, the Department will generally be able to establish due diligence.

The Department will also have to establish that special steps were taken in controlling a specific hazard to show that due diligence was exercised in the particular circumstances. Generally, the greater the risk, the greater the need for specific policies, practices, and other measures to control the hazard.

Documentation

Documentation can show that the Department took steps to control or eliminate specific hazards. It can also show that the Department provided workers with adequate instruction, training, supervision, and discipline to work safely.

Examples of the types of records that the Department should keep include:

- Worker orientation records
- Records of worker and supervisor training with the date, attendance, and general content of the program
- Records of meetings and crew talks where safety issues were discussed
- Inspection reports and records of actions taken to solve problems
- Accident investigations reports
- Supervisors' notes and logs of safety contacts with workers
- Records showing the use of progressive discipline to enforce safety rules
- Subcontractor prequalification documents
- OHS committee minutes showing what steps have been taken to address safety and health issues
- Equipment log books and maintenance records
- Safety forms and checklists
- Medical certificates, hearing tests, and first aid records
- Sampling and monitoring records of exposures to harmful substances
- Statistics on the frequency and severity of accidents.

RIGHT TO REFUSE

No member of the faculty, staff or student should be doing any activity if they believe that the activity would create an undue hazard to themselves or to others. Current regulations make it clear that all employees must be *trained* and have *relevant hazard information* on the materials they are working or exposed to.

When a faculty, staff or student member has reasonable cause to believe that the activity they are about to do would create undue hazard to the health or safety of any person, including themselves, they have the right and responsibility to:

1. Report the circumstances of the unsafe condition to his/her supervisor (or principle investigator).

2. The supervisor will investigate the matter and:
   (a) ensure that any unsafe condition is remedied without delay or
   (b) if in his/her opinion the report is not valid he/she shall inform the person who made the report.

1. It may be helpful for the supervisor to discuss the matter with a member of the Department of Risk Management Services.

2. The supervisor may not assign the work to another person without informing them that the work has been refused and the reasons why the work was refused.

3. When procedure (2.) does not resolve the matter, the supervisor shall investigate the matter in the presence of the complainant and in the presence of:
   (a) a worker's representative of the Local Safety Committee, or
   (b) a member of the trade union representing the worker, or
   (c) when (a.) and (b.) aren't available any other reasonably available worker selected by the complainant.

1. If the matter is not resolved by this point, both the supervisor and the complainant must forthwith notify an officer of the WorkSafeBC who shall investigate the matter without undue delay and issue whatever orders he/she deems necessary.

2. The complainant will not be subjected to disciplinary action because he/she has acted in compliance with the WCB/WORKSAFE BC regulation.

3. A temporary assignment to alternative work (no loss in pay) can be made and this assignment shall not constitute disciplinary action.

It is expected that most matters will be resolved at the (1.) or (2.) level.

AUTHORITIES

WCB/WORKSAFE BC Regulation, Part 3.12

SAFETY POLICY
Element 1

I. PURPOSE

The Safety Policy defines commitment and responsibility. It formally expresses an employer's objective of providing a safe, healthy and secure environment for all UBC faculty, staff, student and visitors.

II. PULP AND PAPER CENTRE REQUIREMENTS

The management of the Pulp and Paper Centre endorses the University's Safety Policy which describes management's commitment and goals to create a workplace free from disease, illness and injury. Compliance with the Workers' Compensation Act and related legislation is the minimum standard acceptable.

This policy is endorsed and signed by UBC's President and is reviewed regularly by management, the Departmental Safety Program Administrator and the Safety Committee. This policy is posted throughout the department and is communicated to all workers.

III. ACTIONS

Director, Pulp and Paper Centre, UBC

- Establish and maintain a departmental safety policy.
- Fulfill responsibilities as outlined in the safety policy.
- Sign the departmental safety policy.
- Ensure supervisors and managers are trained and knowledgeable of their safety responsibilities in safe working practices.
- Review the safety-related policies to ensure compliance with WCB/WORKSAFE BC and internal requirements.

Departmental Safety Program Administrator:

- Monitor the safety program for compliance with WCB/WORKSAFE BC and internal requirements.
- Review the safety-related policies to ensure compliance with WCB/WORKSAFE BC and internal requirements.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):

- Ensure that employees are instructed and trained in safe working practices to secure compliance with WCB/WORKSAFE BC and internal requirements.
- Communicate the safety policy to employees.
- Fulfill responsibilities as outlined in the safety policy.

Local Safety Committee Members:

- Promote safe work practices and conditions.
- Review safety policy.
- Assist in creating a safe workplace by recommending actions, which will improve the effectiveness of the health and safety program.

Workers:
- Observe the established WCB/WORKSAFE BC and internal policies and procedures.
- Work in a careful and safe manner.
- Report any real or potential safety or health hazard to the supervisor.
- Fulfill responsibilities as outlined in the safety policy.

IV. REFERENCES

UBC Safety Policy, page vi

V. AUTHORITIES

WCB/WORKSAFE BC Regulation 3.3 (a)
UBC Policy #7 Safety

PULP AND PAPER CENTRE LOCAL SAFETY COMMITTEE TERMS OF REFERENCE

I. PURPOSE

A Local Safety Committee is a joint committee made up of worker and employer representatives working together to identify and resolve safety and health problems at the place of employment. It is an organizational unit that can coordinate health and safety activities and monitor the status of the health and safety program.

Employees at all levels must be involved in the structure and operation of the safety and health program and in the decisions that affect employee health and safety. Local Safety Committees:

- assist in creating a safe and healthy workplace,
- recommend actions that will improve the effectiveness of the safety and health program
- promote compliance with WCB/WORKSAFE BC and internal regulations.

II. PULP AND PAPER CENTRE REQUIREMENTS

The management of the Pulp and Paper Centre promotes the department's Health and Safety Program and encourages active employee participation by fully supporting local safety committee activities. The Pulp and Paper Centre's Local Safety Committee consists of bargaining unit and management representatives working cooperatively to improve safety and health performance. Their responsibility is to recommend changes to senior management. Senior management then, in turn, considers and make decisions on these recommendations.

Management will provide all necessary resources to ensure that the Local Safety Committee is able to function effectively. These include:

- training for safety committee members
- administrative support
- adequate time for committee members to carry out responsibilities
- open two-way communication channels.

All meeting discussions and decisions are be recorded and the minutes are distributed to senior management, the Departmental Safety Program Administrator and the Risk Management Services Department.

III. ACTIONS

<u>The Director, Pulp and Paper Centre:</u>

- Develop, implement and maintain an effective functioning local safety committee.
- Select management representatives for the committee, as per the established Terms of Reference.
- Assign authority to management representatives.
- Monitor Committee activities for compliance with WCB/WORKSAFE BC and internal requirements.
- Consider and follow up on committee recommendations.
- Provide the Committee with the tools and resources to function effectively.

Departmental Safety Program Administrator:
- Ensure that the Committee meets and functions within the Terms of Reference.
- Provide senior management with committee recommendations.
- Review safety committee meeting minutes and recommendations.
- Communicate information and management decisions throughout their respective organizations.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):
- Participate in Committee activities, when appointed to the Committee.
- Recommend safety and health topics for consideration by safety and health committees.
- Consider committee recommendations.
- Carry out corrective action.
- Provide worker representatives with time to attend committee meetings and to complete committee activities.
- Communicate information and management decisions through their respective organizations.
- Implement corrective action plans.

Local Safety Committee Members:
- Review and monitor the effectiveness of the departmental safety and health program.
- Make recommendations directly to appropriate supervisor/manager and DSPA.
- Assist management in local safety and health program development.
- Function within the set terms of reference.
- Hold regular meetings at least once every two months for the review of:
  - reports of current accidents, incidents or industrial diseases
  - remedial action taken or required by the reports of investigations and inspections
  - other safety and health matters.
- Post and distribute meeting minutes.
- Conduct formal workplace inspections.
- Assist as required in incident and or accident investigations.

Workers:
- Support committee member activities.
- Direct safety and health concerns and suggestions to their supervisor.

IV. REFERENCES

Pulp and Paper Centre's Local Safety Committee Terms of Reference, page 2-4
Hazard Assessments and Work Site Inspections, page 4-1
Accident Investigations, page 5-1
Records and Statistics, page 10-1
Program Review, page 11-1

V. AUTHORITIES

WCB/WORKSAFE BC Regulation 3.3 (d), (e), and (f)

PULP AND PAPER CENTRE LOCAL SAFETY COMMITTEE TERMS OF REFERENCE

UBC Policy #7 Safety

INTRODUCTION

The UBC Policy #7 ***University Safety*** provides the following general statement of objectives:

> *"The University aims to provide a safe, healthy and secure environment in which to carry on the University's affairs. All possible preventative measures are taken to eliminate accidental injuries, occupational diseases and risks to personal security.*
>
> *Compliance with the Workers' Compensation Act, WHMIS and related legislation is the minimum standard acceptable. All students, members of faculty and staff are encouraged to strive to exceed these minimum legal standards and eliminate unnecessary risks.*
>
> *The University Health and Safety Committee works to achieve these objectives by providing education and reviewing policies and procedures."*

PULP AND PAPER CENTRE'S LOCAL SAFETY COMMITTEE

The Pulp and Paper Centre's Local Safety Committee (PPCLSC) has been mandated in the University Health and Safety policy to:

> "Carry out the safety programs within their areas and make recommendations to ensure that the safety objectives of the University can be achieved."

This Committee has been directed to consider issues of personal safety and security and the fire safety of their work areas.

COMMITTEE MEMBERSHIP

All work areas of the Pulp and Paper Centre Building are to be covered by the PPCLSC. Questions concerning appropriate areas of jurisdiction and organization of the PPCLSC should be directed to the UBC Risk Management Services Office.

The PPCLSC consists of not fewer than four members who work in the area covered and are familiar with local operations. Committee members are designated as representing management and workers. As required by WCB/WORKSAFE BC Regulations, management representatives should not outnumber worker representatives on the committee. Management representatives are appointed by the Director, Pulp and Paper Centre. Worker representatives shall be elected or appointed by their peers. Efforts should be made to ensure all major work groups or areas are represented on each committee.

The members of the committee then elect from amongst themselves a chair and secretary. Both offices may not be held by worker representatives or by management representatives at the same time.

PULP AND PAPER CENTRE LOCAL SAFETY COMMITTEE TERMS OF REFERENCE

ROLE OF THE COMMITTEE

In order to monitor the Pulp and Paper Centre's Safety Program, the PPCLSC shall:

1. Participate in regular work site inspections and report any hazardous conditions found.
2. Review written safety instructions and make recommendations for their improvement, particularly when new equipment of processes are introduced.
3. Review and make recommendations concerning all reported accidents or incidents that may have occurred in their area of coverage.
4. Ensure that accidents have been reported to the University Health, Safety and Environment office.
5. Participate in accident investigations.
6. Worker representatives should accompany WCB/WORKSAFE BC officers on inspection tours as required by WCB/WORKSAFE BC Regulations.
7. Review and make recommendations concerning, inspection reports from WCB/WORKSAFE BC.
8. Consider recommendations or suggestions from staff concerning health and safety issues and endorse them where warranted.
9. Co-ordinate committee activities with the local Fire Safety Director and cooperate with him or her to promote fire safety.
10. Include in all its activities consideration of conditions or circumstances that may affect the personal security of students, faculty or staff.
11. Conduct audits of the health, safety and personal security programs in their area of responsibility.

COMMITTEE MEETINGS

Meetings are held at least once every two months. Each meeting follows an agenda which contains the following topics:

1. Roll Call or Attendance
2. Reading and acceptance of minutes of the last meeting
3. Report of actions taken as a result of items arising from the minutes
4. Reading of correspondence
5. Report of committee members who have conducted inspections
6. Inspection reports from WCB/WORKSAFE BC officers
7. Reports of accident or near miss incident investigations, causes and means of prevention
8. Recommendations for improvement in safety programs such as training needs, awareness programs; hazard communication, or specific hazard abatement actions
9. New business
10. Time and place of next meeting
11. Adjournment

COMMITTEE MINUTES

The meetings are recorded by the Secretary and copies of the minutes are distributed to:

1. All committee members
2. The Departmental Safety Program Administrator
3. The Director, Pulp and Paper Centre
4. The University Risk management Services Office.

Copies of Minutes are to be posted on Department Bulletin Boards.

COMMITTEE RECOMMENDATIONS

Committee recommendations concerning the control of hazards or the improvement of prevention programs shall be directed to the DSPA who has the responsibility of either making the necessary corrections or relaying the recommendations to the Director and/or senior management for consideration. The Director's and/or senior management's response to these recommendations shall be delivered to the committee chair in time for the next committee meeting. Issues which have not been resolved to the satisfaction of the committee may be referred to the Director, Risk Management Services or to the University Health and Safety Committee for their assistance.

DUTIES OF MEMBERS AND OFFICERS

The duties of the PPCLSC members are to:

1. Report unsafe conditions and practices.
2. Attend all safety committee meetings.
3. Report all accidents or near accidents.
4. Conduct inspections.
5. Investigate all serious accidents.
6. Contribute ideas and suggestions for improvement of health and safety.
7. Work safely, and influence others to work safely.
8. Immediately advise anyone who may be affected by any unsafe act or condition.
9. Attend safety courses or seminars which are made available to committee members.
10. Promote and support personal security within a safe learning and working environment.

PULP AND PAPER CENTRE LOCAL SAFETY COMMITTEE
TERMS OF REFERENCE

THE DUTIES OF THE CHAIR

1. Arrange for a time and place for meetings.
2. Prepare and distribute agenda before the meetings.
3. Review previous minutes and materials prior to each meeting.
4. Report on the status of suggestions and recommendations.
5. Guide committee discussions towards definite conclusions.

THE DUTIES OF THE SECRETARY

1. Prepare minutes of the meeting.
2. Distribute the minutes.
3. Write reports and correspondence.

SAFETY COMMITTEE MEMBERS

The members of the PPCLSC are:

The members of the PPCLSC are:

Name	Telephone	E-Mail	Unit	Office
George Soong (Chair)	604-822-2530	gsoong@mail.ubc.ca	MECH	PPC 114
Abbas Nikbakht	604-822-2813	abbas.nikbakht@gmail.com	MECH	PPC 309
Francisco Fernandez	604-827-2390	fernandez@mech.ubc.ca	MECH	PPC 207
Nici Daruchuk	604-822-9649	nicid@mail.ubc.ca	MECH	PPC 321
Troy Mithrush	604-368-5800	troy.mithrush@gmail.com	MECH	PPC 219

I. PURPOSE

Employee orientation and training are key elements to prevent accidents. Hazardous situations can be avoided or made less hazardous, if employees receive appropriate training and instruction. It is imperative that new employees and all employees, who are being assigned potentially hazardous tasks for the first time, be given adequate training.

Supervisors are the key personnel in both production and occupational safety and health. They are responsible for actions taken within their area of influence and are held accountable by UBC for the results within their area. Supervisors are responsible to ensure that work procedures are followed in a manner compatible with the safety and health of employees.

II. PULP AND PAPER CENTRE REQUIREMENTS

The WCB/WORKSAFE BC requires the Pulp and Paper Centre to provide proper direction and instruction to workers in the safe performance of their duties. Through training and supervision, employees are made aware of hazards and safe work procedures to follow in order to protect themselves.

The Pulp and Paper Centre meets this requirement by providing workers with:

- complete orientation and on the job training
- consistent and fair work supervision.

Records of orientation and training (sample on page 3-8) are maintained to verify that employees have received adequate instruction to work safely. The area supervisor signs each record upon completion of an employee's training and will regularly follow up on that training to ensure consistency and competency.

<u>Orientation</u>

The University Human Resource Department holds a general orientation session for new or transferred University employees. The following general topics are covered during the orientation:

- UBC objectives
- job description (including limitations and authority)
- performance expectations
- wages, hours, benefits and pay period etc.

Supervisors conduct departmental orientation sessions for their areas in accordance with Pulp and Paper Centre Orientation and Training Guidelines. An employee must receive orientation training within 10 working days of his/her start date. Adequate time is allocated for this training to ensure that employees fully understand the instructions provided.

On the Job Training

On the job training is provided to new staff or when new procedures are introduced. On-the-job training is conducted by supervisors and will include:

- using written job procedures and job safety instructions to demonstrate the job
- explaining safety aspects of conducting the particular task
- explaining who to contact for help
- gradually letting the employee perform the job, under supervision, until the employee demonstrates the knowledge and skills necessary for the job
- verifying that the employee has learned the correct job procedure.

Training of Supervisors

Supervisors are key personnel in the implementation and overall success of the Health and Safety Program. They are largely responsible and accountable for the day-to-day activities of the program. Supervisors are required establish and maintain safe and healthful working conditions.

In order for supervisors to effectively meet their responsibilities, they are trained in the following areas:

- techniques of effective supervision and instruction, including motivation and communication,
- how to investigate accidents and to take corrective and preventive action,
- how to conduct inspections of their area.

Supervision

Department Supervisors ensure that work is carried out as expected by maintaining positive supervision over the work activities in his/her unit. Workers are kept up to date of management decisions and action plans through periodic staff meetings, department memos and internal e-mail. All employees are expected to work according to established safe work procedures. Supervisors will immediately rectify any unsafe actions in accordance with proper corrective procedures.

III. ACTIONS

The Director, Pulp and Paper Centre:

- Assign responsibilities for establishing and maintaining the departmental orientation and training program.
- Ensure all departmental training are in compliance with WCB/WORKSAFE BC and internal requirements.
- Provide supervisors with the tools and resources to ensure the success of training programs.
- Establish and support the training and orientation programs.
- Review DSPA, safety committee and supervisor recommendations on training.
- Provide supervisors with the tools and resources to ensure the success of training programs.

Departmental Safety Program Administrator:
- Monitor and evaluate training programs.
- Provide supervisors with the tools and resources to ensure the success of training programs.
- Establish and maintain the departmental orientation and training program.
- Communicate recommendations from supervisors to senior management.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):
- Understand the hazards associated with a job and their potential effects on employees.
- Orientate new and transferred employees before assigning them to their respective work.
- Conduct a follow up on training and orientation of employees.
- Ensure that all employees understand what to do in emergencies.
- Maintain training records on each employee.
- Maintain continual awareness for hazards in their area of supervision.
- Hold regular staff meetings.
- Implement corrective action plans.
- Communicate recommendations to DSPA.
- Communicate information and management decisions to the down through their respective organizations.

Local Safety Committee Members:
- Monitor and evaluate training programs.
- Communicate recommendations to the DSPA and management.

Workers and Students:
- Follow safety rules, procedures and safe work practices.
- Understand the polices, rules and procedures established to prevent exposure to hazards.
- Actively participate in orientation and training programs, and report to their supervisors any lack of qualifications to perform duties.
- Report hazardous conditions to supervisor.

IV. REFERENCES

Due Diligence, page ix
Orientation Training Guidelines, page 3-5
Pulp and Paper Centre Employee Orientation and Training Record, page 3-12
Hazard Assessments and Work Site Inspections, page 4-1
Safe Work Rules and Procedures, page 6-1

Technical Information and Safe Work Procedures Manual

V. AUTHORITIES

WCB/WORKSAFE BC Regulation 3.3 (c) and (g)
UBC Policy #7 Safety

EMPLOYEE ORIENTATION TRAINING

New employees suffer significantly higher accident rates then their work group average. As work forces expand, accident rates increase. This vulnerable group must receive appropriate levels of supervision training to minimize the risks of accidents.

Employees, when they first arrive at a job site, are eager to please, and may pretend to understand material or instructions in order to create a good impression. A planned orientation process is essential to ensure that the employee becomes knowledgeable and competent as soon as possible. An orientation program must respond to the workers need to know basic information about the job. The following general topics must be addressed.

- departmental objectives
- job description (including limitations and authority)
- performance expectations
- wages, hours, benefits & pay period etc.
- training plan
- safety

The orientation program must recognize that workers new to the job suffer from information overload. Verbal communication and instruction must be supported by written material, demonstrations and hands on practice. The safety elements of an orientation program should include the following elements:

UBC POLICIES - Safety Policy (#7) & Environmental Protection Compliance Policy (#6) – All new personnel must read and become familiar with their own personal responsibilities under these policies. Supervisory staff must also be familiar with their responsibilities under these policies.

DEPARTMENTAL POLICY-Staff should be able to explain, in general terms, what the departmental safety and health policy is.

LOCAL SAFETY COMMITTEE PROGRAM MANUAL –.All new personnel should read through the Department's Safety Program Manual and know where it is located.

SAFE WORK PROCEDURES - Ensure that all personnel know where the safe work procedures for their jobs are located.

FIRE SAFETY / EVACUATION ORIENTATION – show all personnel the locations of the fire alarms, extinguishers, emergency exits, the fire evacuation plan, and department meeting place.

EMERGENCY & FIRST AID CONTACTS –inform all new personnel of the site-specific contact numbers for fire, first aid treatment, security issues, and hazardous materials spills response. The front inside cover of the UBC Phone Book provides this information for UBC campus. Hospitals and other off-campus sites may have different contact numbers.

INCIDENT/ACCIDENT REPORTING PROCEDURES – Tell personnel how to report unsafe conditions and activities that have resulted in injuries, release of hazardous materials, or damaged property.

EMERGENCY / EARTHQUAKE PREPAREDNESS – Walk new employees through appropriate emergency evacuation rout for their work area. All new personnel should read pages 2 and 3 of the UBC Phone Book for UBC specific procedures for bomb threats, earthquakes, and other emergencies. Supervisors can also distribute the pamphlet "Are you ready for an earthquake on campus?" available through Risk Management Services Earthquake preparedness courses are also offered through the MOST program.

WORKPLACE VIOLENCE PREVENTION - supervisors will ensure that employees who may be exposed to the risk of violence are informed of the nature and extent of the risk. Personnel must be provided with adequate training to be able to recognize the risk, take preventative measure, and report incidents. The Personal Security Coordinator (RMS) will act as a resource for personal security issues

WHMIS TRAINING – Personnel who work with or in proximity to a controlled product must be instructed in the WHMIS (Workplace Hazardous Materials Information System) method of identifying hazardous materials.

HAZARDOUS WASTE HANDLING / DISPOSING – New personnel who work with hazardous materials should be trained in the site-specific procedures for handling and disposing of hazardous waste. In addition, the successful completion of Health, Safety and Environment courses are a requirement for using biohazardous and radioactive materials.

SPILL RESPONSE / REPORTING – Personnel who work with hazardous materials should read the spill response and reporting procedures in the Department Safety Program Manual and should be trained in site-specific procedures.

EQUIPMENT USAGE – New personnel should be trained in the use of any equipment they will be using, especially those with inherent hazards or used to control hazards, e.g. autoclaves, fume hoods.

HEALTH, SAFETY AND ENVIRONMENT COURSES

The following courses are taught or coordinated by the Department of Risk Management Services. Invite personnel to take these beneficial courses where applicable.

Introduction to Laboratory Safety
This course, which covers safety in laboratories, is suitable for undergraduate students working or studying in laboratories where hazardous materials are in use. All summer students, who may potentially be exposed to hazardous materials, are required to take this safety course. This course fulfills the safety requirement for summer work students, co-op students or work study students who are working under direct supervision. Successful students will be knowledgeable about the Workplace Hazardous Material Information System (WHMIS), biohazards, hazardous chemicals and radioactive materials. Completion of this course does NOT certify individuals to work unsupervised with biohazards, radioactive materials or hazardous chemicals. To work with these hazards independently, all persons must complete the appropriate hazard specific courses.

Laboratory Biological Safety
The University Biosafety Committee requires that the successful completion of the "Laboratory Biological Safety Course" be a mandatory requirement for all new staff and new projects involved with Biohazard level II or greater. This applies to all Principle Investigators/Course Directors, faculty, staff and students conducting work with these materials.

Laboratory Chemical Safety
The two lectures will cover: chemical hazards, WHMIS, safe handling, storage, hazard recognition and control, waste management and emergency response. In the practical session, the participant will learn about the Vancouver Fire Service's HAZMAT team, perform a spill clean up, learn decontamination procedures and how to safely extinguish a fire.
This course is for laboratory supervisory personnel and is also suitable for students working or studying in laboratories where chemicals are in use. UBC's Chemical Safety Advisory Committee requires that: " ***All faculty, staff and graduate students, who handle hazardous materials, are required to take a chemical safety course***," This course fulfills this requirement.
Attendance at both lectures, a practical session, payment of the aforementioned fee and successful completion of the exam is required for certification.

LASER Safety and Program Development
The UBC Radiation Safety Office (RSO) will be presenting a short course entitled: Developing A Laboratory LASER Safety Program. This two hour course is designed to enable researchers to design and maintain an effective LASER Safety Program specific to the LASER hazards within their workplace. The course topics include a brief review of LASER energy generation, the organs at risk and the potential consequences of accidental exposure. The various LASER hazard classifications will be reviewed and hazards incidental to LASER generation will be addressed. The elements of an effective LASER safety program will be introduced and participants will be encouraged to begin the steps of designing a safety program specific to the needs of their workplace. Draft programs will be reviewed by the RSO and will become the operational standard for their worksite. Participants are

encouraged to bring to the class any documentation relating to the LASER equipment, LASER location, LASER enclosures, LASER interlocks, etc in their workplace in order to lay the groundwork for their programs.

Office Ergonomics Representative Training
This 4-hour course is intended for designated individuals who will be the representative for office ergonomics in their department. Training and practice will be provided on proper computer workstation set-up. Upon completion of the course, participants will be able to assist colleagues to prevent/minimize risk factors potentially leading to injury with proper computer workstation set-ups.

Occupational First Aid, Level I
The Occupational First Aid Level 1 Course is a one-day training session which teaches the basics of first aid response in an emergency situation. Certification is from the Workers Compensation Board and Saint John Ambulance, and is valid for two (2) years. The course also includes CPR Level A certification, which is valid for one (1) year. The course is held at the University Fire Station-Hall No. 10 (2992 Wesbrook Mall) from 8:30 am - 5:00 pm.

Radionuclide Safety and Methodology
This course take place over THREE half-days. The course meets the basic training requirements of the Canadian Nuclear Safety Commission and consists of six hours (2days x 3hrs) of lecture over two days and a three-hour laboratory practical session on day 3 that includes a final exam. The fundamentals of radiation physics are briefly covered, with the emphasis of the course placed on practical handling techniques, health hazards, record keeping, legal requirements, purchasing of isotopes, spill management and waste disposal. FAILURE TO ATTEND BOTH LECTURES AND THE PRACTICAL SESSION PRECLUDES CERTIFICATION

Safety Committee Training
TWO DAY COURSE Intended for safety committee members and supervisors. Topics include accident prevention, effective committee operations, safety inspections, accident investigation, safety training and the role of the WCB/WORKSAFE BC. Meets WCB/WORKSAFE BC Safety Committee Training Requirements.

PPC SAFETY INFORMATION HANDOUT

Emergency Telephone Numbers

Fire, Police, Ambulance

911

First Aid (UBC Campus).....604-822-4444
(Faculty and Staff Only – student call 911)
Hazardous Materials Response 911

Poison Control Centre.....604-682-5050
Campus Security.....604-822-2222
UBC Trouble 604-822-2173

Pulp and Paper Centre Safety Committee Members

George Soong (Chairman): Room 321
Abbas Nikbakht: Room 309
Francisco Fernandez: Room 207 Troy Mithrush: Room 219

UBC Safety Policy #7

The University aims to provide a safe, healthy and secure environment in which to carry on the University's affairs. All possible preventive measures are taken to eliminate accidental injuries, occupational diseases and risks to personal security. Compliance with the Workers Compensation Act, WHMIS and related legislation is the minimum standard acceptable. All students and members of faculty and staff are encouraged to strive to exceed these minimum legal standards and to eliminate unnecessary risks.

Pulp and Paper Centre Safety Policy

The safety of all faculty, staff, students and visitors to the Pulp and Paper Centre is of paramount importance. Our objective is to provide a safe and healthy working environment for all.
To prevent accidents and occupational injuries, we have established safety guidelines and procedures in accordance with UBC policy. We expect compliance from each and every individual to ensure safety for all.

Safety Manuals

Emergency/Fire Safety Manual and PPC Safety Program Manual are available in safety section of PPC 321 and top of mail box at second floor. In the future, the manuals will be available online from the Pulp and Paper Centre website, www.ppc.ubc.ca (password=safety).

Safety Courses

All researchers engaged in laboratory work are encouraged to attend safety courses offered by the UBC Health, Safety and Environment Department which are related to their field of research. Courses offered include: Laboratory Biological Safety, Laboratory Chemical Safety, Chemical Safety Orientation, Lab safety for Undergraduates, LASER safety and Program Development, Occupational First Aid Level One Training, Radionuclide Safety and Methodology and Safety Committee Training. Registration and course dates can be found by visiting the UBC Risk Management Services website at www.riskmanagement.ubc.ca.

Accident/Incident Reporting

All accidents and WCB/WORKSAFE BC claims must be reported to supervisor and the Chair of the Pulp and Paper Centre Safety Committee with the supervisor completing a standard accident report and investigation form available from room 321. The incident report section will be forwarded to the UBC Risk Management Services Department for further processing within 24 hours of the incident.

Safety Bulletin Board

A safety bulletin board is located in the hallway between room 108 and 127. Information on UBC Safety Policy # 6 & #7, Chemical Storage and Disposal Guidelines, Emergency telephone numbers, Emergency Procedures & General Information and Minutes of bi-monthly safety meetings.

MSDS Sheets

MSDS or Material Safety Data Sheets can be found in safety section of the PPC labs. The MSDS sheets on file are only for the chemicals listed in PPC chemical inventory database. For a more complete listing of MSDS sheets set your web browser to http://www.riskmanagement.ubc.ca/inner.php?scid=15&pid=101.

Chemical Spill Kit

A general use chemical spill kit is located in the hallway outside room 308 next to the elevator for use by personnel trained in the clean up of a chemical spill.

Evacuation Procedures

Instructions to building occupants in case of an Emergency/Fire

If you discover a fire or explosion in the building.

1. Immediately sound the fire alarm. See the marked floor plans on each floor for the break-glass station nearest to you.
2. Contact the Emergency Director to give information you have about the emergency – location, floor, whether fire is spreading, people trapped, etc.
   - The Emergency Director is located on first floor in room 111, phone 822-8566.
   - The person in charge will pass the information on to the fire department.
3. Attempt to control the fire with available fire equipment – *if you can do so safely!* Use an extinguisher or a hose from a hose cabinet. See the marked floor plan for equipment locations.
4. If you cannot control the fire, try to isolate it by closing the doors. Do not lock doors.
5. Leave by the nearest safe exit.
6. Do not use the elevator.
7. Walk, do not run. Shut doors behind you. On leaving the building, move well away for it immediately. Go to the designated assembly area (see below).
8. Do not re-enter the building until the Fire Department and the Emergency Director have give permission to do so.

If you hear the fire alarm ringing ---
Follow steps 5 through 9, above.

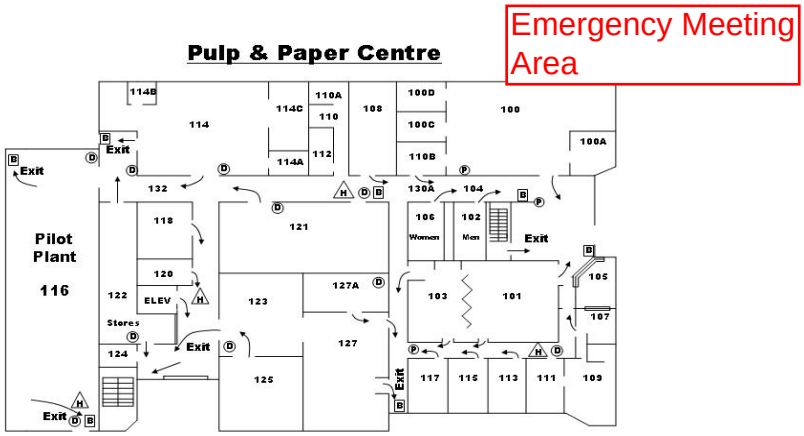
Instructions to building occupants in case of an Earthquake

In the event an earthquake strikes –

1. Remain calm – reassure others.
2. If indoors, stay there! If outside – stay there!
3. Take cover, and protect the head, face and torso.
4. Move away from large windows and objects which may fall.

After the shaking stops …

1. Assess your immediate surroundings for dangers. Evacuate if necessary.
2. Check for injuries. Administer first aid to the most seriously injured.
3. Check building for structural damage. Evacuate if necessary.
4. Check utilities (e.g. gas, power). Shut off if necessary
   - Never touch downed power lines
   - Only shut off gas if you smell it or suspect a leak.
5. Send a runner to the next closest unit to exchange information.
6. Be alert for fire hazards. *Put out small fires, if it is safe to do so!*
7. Do not light a match or turn on a light switch. Use a flashlight!
8. Clean up hazardous materials and debris, *if it is safe to do so*.
9. Wear sturdy shoes and protective gloves if there is debris.
10. Put all telephone receivers back on hooks.
11. Do not use telephone unless absolutely necessary.
12. Turn on battery operated radio (or car radio) for emergency bulletins



PULP AND PAPER CENTRE
EMPLOYEE ORIENTATION AND TRAINING RECORD

Purpose: The Department's goal is to provide a safe, healthy and secure working environment and to ensure that its activities do not impact negatively on the environment. Supervisors will ensure that all persons working or studying within their unit are aware of safety practices, follow safety procedures, and are appropriately trained in relevant environmental issues and procedures for preventing, responding to, and reporting incidents that may affect the environment.

Instructions: The Department maintains training records for each individual. When an item has been completed, record the training date and the supervisor's signature.

(*See next page for description of training components.*)

Name: _____ Start Date: _____
Position: _____ Supervisor: _____
Department: _____ Safety Committee Rep: _____

	Yes √	***NA*** √	***Date Completed***	***Supervisor's Initial***
GENERAL				
UBC Safety Policy (#7)				
UBC Environmental Compliance Policy (#6)				
SITE SPECIFIC				
Department Safety Program Manual				
Health and Safety Roles and Responsibilities				
Safe Work Procedures				
Fire Safety/Evacuation Orientation				
Emergency and First Aid Contacts				
Incident/Accident Reporting Procedures				
Emergency Preparedness				
Workplace Violence Prevention				
WHMIS Training				
Hazardous Waste Handling/Disposal				
Spill Response/Reporting				
Equipment Usage				
HEALTH, SAFETY & ENVIRONEMENT COURSES				
Safety Committee Course				
Laboratory Chemical Safety Course				
Laboratory Biological Safety Course				
Laser Safety and Program Development				
Occupational First Aid Level 1				
Office Ergonomics Training				
Radionuclide Safety and Methodology				

PULP AND PAPER CENTRE
EMPLOYEE ORIENTATION AND TRAINING RECORD

	Yes √	*NA* √	*Date Completed*	*Supervisor's Initial*
OTHER:				
OTHER:				
OTHER:				
OTHER:				

I have completed and understand the components of this orientation and training session.

_____

Employee's Signature

HAZARD ASSESSMENTS AND SAFETY INSPECTIONS
Element 4

I. PURPOSE

Work site hazard assessments and inspections are key activities in the prevention of accidents. Their purposes are to:

- identify existing and potential hazards
- increase awareness leading to the prevention of workplace accidents and illnesses
- ensure compliance with standards and regulations.

II. PULP AND PAPER CENTRE REQUIREMENTS

The WCB/WORKSAFE requires the Pulp and Paper Centre to ensure that hazards to the safety and health of workers are identified and brought to management's attention. It is management's responsibility to ensure that the identified hazards are eliminated and, where this is not practicable, to ensure the hazards are controlled and that workers are protected from the hazards. To meet this requirement, the Pulp and Paper Centre conducts:

- hazard assessments prior to all new projects, jobs or processes, or the introduction of new equipment or hazardous materials
- regular workplace inspections.

The Pulp and Paper Centre will provide all necessary resources to ensure that hazard assessments and workplace inspections are effective. These include:

- hazard recognition and safety inspection training for inspectors
- time for inspectors to complete their duties
- established communication channels between inspectors, local safety committee and senior management
- quick action on recommended corrections.

All assessments and inspections are documented to demonstrate due diligence.

Hazard Assessments/Job Analyses

A hazard assessment or job safety analysis is conducted prior to the start of any new project, task or job. Its purpose is to anticipate, as much as is reasonable, any hazards or hazardous conditions that are inherent or could arise out of a new project, task or job. Once the hazards have been identified, supervisors then determine and implement controls for eliminating or minimizing these hazards. Hazard assessments are also undertaken when major modifications are made to a project, task or job.

The preliminary hazard analysis checklist that is included on page 4-6 has been designed to anticipate any hazards that may be found in laboratory environments. A modified version of this form, or one designed to reflect the nature of the hazards found in other types of work, research and teaching environments may be used.

Ongoing supervisory and safety committee inspections are expected to identify hazards that developing during any new project, task or job.

Workplace Inspections

The Pulp and Paper Centre 's inspection program comprises of four types of inspections that are structured as follows:

Informal Workplace Inspections
All employees are expected to maintain continual awareness of hazards in their work areas. This is accomplished by supervisors conducting regular walk-throughs of their areas of authority and by workers checking their work areas prior to commencing work. No formal inspection report is required; however, any detected hazards must be corrected immediately if the task is within the employee's capabilities. If not, the hazard should be reported to the area supervisor or management for correction.

Supervisory Inspections
Work areas will be inspected monthly (preferably on the same day each month) by the area supervisor. Supervisors may delegate this responsibility to another qualified person (ie. Lab Manager, Technician, etc.); however, the responsibility for ensuring that supervisory inspections are completed still rests on supervisors. See page 4-16 for the supervisory inspection delegation sheet.

Each supervisor in conjunction with the DSPA will develop a site specific inspection checklist. Inspection checklists will be completed for each inspection and each supervisor must regularly review and update his/her checklist as required. The completed reports shall be forwarded to the DSPA for review. The DSPA will provide summaries for senior management and the Local Safety Committee to review. The area supervisor must ensure that corrective action is taken so that the hazard is eliminated or controlled.

Safety Committee Inspections
Safety Committee Inspections are workplace Inspections that are conducted by Local Safety Committee members (LSCM) at least annually. An Inspection Report is completed and copies sent to the supervisor of the inspected area, the DSPA and the Safety Committee for review. The area supervisor must ensure that corrective action is taken so that the hazard is eliminated or controlled.

Special Inspections
Special inspections take place immediately after a malfunction, accident or after a new work procedure or machinery is introduced. The area supervisor and a worker representative (preferably a safety committee member) conduct this type of inspection. An Inspection Report must be completed and distributed to the DSPA and local safety committee for review. In addition, an Accident Investigation may be required for certain accidents (see Accident Investigation section of the manual). The area supervisor must ensure that any existing unsafe condition is effectively controlled before commencing an inspection or investigation.

The Pulp and Paper Centre supervisors and employees responsible for conducting inspections are:

NAME AND TITLE	AREA	DATE OR FREQUENCY OF INSPECTION
Identify all assigned inspectors		

III. ACTIONS

The Director, Pulp and Paper Centre:

- Assign responsibility for the development, implementation and maintenance of the Inspection Program.
- Communicate action plans and management decisions throughout their respective organization.
- Monitor the Inspection Program for compliance with WCB/WORKSAFE and internal requirements.
- Provide inspectors with the necessary tools and resources to function effectively.

Departmental Safety Program Administrator:

- Ensure the Inspection Program is functioning as required.
- Monitor the Inspection Program for compliance with WCB/WORKSAFE and internal requirements.
- Review inspection reports and provide summaries to management and Safety Committee.
- Communicate recommendations to management.
- Communicate action plans and management decisions throughout their respective organization.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):

- Develop, implement and maintain the hazard assessment and inspection programs.
- Conduct required workplace inspections.
- Conduct special inspections and accident investigations when required.
- Complete and maintain proper inspection records.
- Forward copies of inspection reports to the DSPA for review.
- Communicate recommendations to the DSPA.
- Communicate information and management decisions throughout their respective organizations.
- Correct unsafe conditions or practices or ensure the hazard is controlled until corrective action can be taken.

Local Safety Committee Members:

- Conduct annual Safety Committee Inspections.
- Forward copies of Safety Committee Inspection Reports to area supervisors and the DSPA for review.
- Review inspection reports.
- Communicate committee recommendations to the DSPA.

- Follow up on suggestions or concerns made.
- Conduct special inspections and accident investigations when required.

Workers and Students:
- Conduct informal daily inspections of their own work area.
- Report all hazards to the immediate supervisor.
- Participate, when required, in scheduled workplace inspections and accident investigations.

IV. REFERENCES

Due Diligence, page ix
Hazard Assessment Procedures, page 4-5
Preliminary Hazard Analysis Checklist, page 4-6
Inspection Procedure, page 4-7
Laboratory Inspection Checklist. Page 4-9
Office Areas Inspection Checklist. Page 4-13
Supervisory Inspection Delegation Sheet, page 4-16
Accident Investigations, page 5-1

V. AUTHORITIES

WCB/WORKSAFE Regulation, 3.3 (b) and 3.5
UBC Policy #7 Safety

Refer to Appendix C – Laboratory Safety Guidelines for information when performing a hazard assessment or job safety analysis prior to the start up of any new projects.

- **C.10 Chemical Spills**
- **C.26 Hazardous Waste Disposal**
- **C.27 Electrical Hazards**
- **C.28 Biosafety**

PRELIMINARY HAZARD ANALYSIS CHECKLIST

Project or job to be completed: _____

Name and title of person completing this form: _____

Date: _____

Item	√	To Be Done
Literature search		
List possible reactions and side reactions. Are substitutions possible?		
Obtain MSDS Sheets. Review the characteristics of all reactants, intermediates and product		
What are the toxic characteristics? What protective measures are required?		
Know first aid procedures for exposure to chemicals, burns, cuts, etc.		
Does work involve radiation, noise, biological or chemical air contaminants?		
Amount of material/energy involved? How violent may the reaction be? Determine quantity and rate of evolution of heat and gases.		
Does material decompose and if so, how rapidly, and to what?		
Is the material impact sensitive?		
What is its stability on storage to cold, heat, light, water, metals, etc.?		
What are effects of catalysts, inhibitors, or contaminants on the reactions?		
Will water or air affect the reaction?		
Can mischarge or wrong addition order affect the reaction?		
Are incompatible chemicals involved or likely to be generated?		
Will work require special precautions to prevent odour problems, air pollution, or sewer contamination?		
How should wastes be safely handled?		
Does equipment fit safely into area allocated? Is isolation, shielding, pressure relief, ventilation, redundant controls, automatic shutdown, etc. required?		
What would happen and what should be done if: -Electric power fails? -Cooling or heating system fails? -Automatic controls or equipment air fails? -Ventilation fails? -Pressure gets out of hand? -Water or air leaks into system? -Material or reaction container falls and breaks or spills contents?		
Have personnel who may be involved been notified of any special hazards?		
Can all parts of the system be vented before breaking any lines?		

INSPECTION PROCEDURES

Pre-Inspection

1. Review the previous Inspection Checklist to determine items that require special attention.

2. Obtain a blank copy of the Inspection Checklist form for the area being inspected.

Inspection

3. Using the previous inspection checklist, ensure that previous deficiencies have been either corrected or controlled so as to minimize the hazards to employees. Where the items have NOT been corrected or controlled, mark and highlight these items on the current Inspection Checklist.

4. Using the Inspection Checklist as a guide, complete a thorough inspection of the area selected. Do not only look for items on the checklist. Also consider unsafe conditions and tasks, as well as violations of the WCB/WORKSAFE and internal requirements.

5. As each item is inspected, indicate on the Inspection Checklist:
   - Yes if the item is safe
   - No if the item requires correction.
   - N/A if the item is not applicable to the area.

6. For items that are checked NO, record the location, concern and corrective action required in the comment sections. Use the back of the page if more space is required.

Post-Inspection

7. Review the Inspection Checklist and ensure that the information recorded is complete.

8. Correct any unsafe condition or act if possible. On the Inspection Checklist, date and initial any item that has been corrected. Make sure temporary safety measures are taken whenever permanent or complete correction will require additional time. For items that require a major expenditure, write an explanation of the hazard and include the potential impact of an accident.

9. Return the previous Inspection Checklist to where it was obtained.

10. Send a copy of the current Inspection Checklist to the Safety Program Administrator for review and distribution. If the inspection is a Supervisory Inspection, a copy of the checklist should also be sent to the Local Safety Committee for review. For Safety Committee Inspections, a copy of the checklist should be sent to supervisors of the areas inspected for review.

11. Post a copy of the Inspection Checklist in the area inspected.

Inspection Follow-Up

12. For all deficiencies, ensure corrective action or control has been taken.

13. Be persistent and regularly follow-up on items that require corrective action. Consult the Safety Program Administrator when necessary.

14. Periodically review corrective actions or control methods.

15. Ensure all completed checklists are properly posted, distributed and filed.

LABORATORY INSPECTION CHECKLIST

Laboratory Supervisor:_____ **Room Number:** _____
Inspected By: _____ **Date:** _____

The following inspection report identifies deficiencies found by the inspection team.

ITEM	YES	NO	NA	COMMENTS
A. EMERGENCY and INFORMATION MATERIAL				
1. Emergency procedures posted and legible	☐	☐	☐ ____	_____
■ fire, spills, injuries, earthquake	☐	☐	☐ ____	_____
2. MSDS information posted	☐	☐	☐ ____	_____
3. Chemical Safety Manual available	☐	☐	☐ ____	_____
4. Chemical inventory current (<1 year)	☐	☐	☐ ____	_____
5. Monthly inspections posted and up-to-date	☐	☐	☐ ____	_____
6. Shower available and accessible	☐	☐	☐ ____	_____
7. Eyewash available and accessible	☐	☐	☐ ____	_____
8. Eye wash tested regularly (minimum, bi-weekly)	☐	☐	☐ ____	_____
9. Fire extinguisher present and accessible	☐	☐	☐ ____	_____
10. Fire extinguisher seal intact; date tested	☐	☐	☐ ____	_____
11. Spill kit available and stocked.	☐	☐	☐ ____	_____
B. FIRST AID				
12. First aid kit available and stocked	☐	☐	☐ ____	_____
■ inventory list available	☐	☐	☐ ____	_____
13. Treatment record sheet available and used	☐	☐	☐ ____	_____
C. PERSONAL PROTECTION				
14. Safety glasses available and worn	☐	☐	☐ ____	_____
15. Laboratory coats and gloves available and worn	☐	☐	☐ ____	_____
16. No bare legs	☐	☐	☐ ____	_____
17. Substantial footwear worn	☐	☐	☐ ____	_____
18. Facial shield available and in good condition	☐	☐	☐ ____	_____
19. Blast shield available and in good condition	☐	☐	☐ ____	_____
20. Respirator(s) available	☐	☐	☐ ____	_____
21. Respirator user(s) trained & fit-tested	☐	☐	☐ ____	_____
22. Vacuum ballasts/Dewar flasks taped or meshed	☐	☐	☐ ____	_____
D. HOUSEKEEPING				
23. Bench tops and sink areas tidy	☐	☐	☐ ____	_____
24. Tripping hazards absent, passageways clear	☐	☐	☐ ____	_____
25. Laboratory exits clear and doors unlocked	☐	☐	☐ ____	_____
26. Food and drink absent	☐	☐	☐ ____	_____
27. Chipped or broken glassware not in use	☐	☐	☐ ____	_____

LABORATORY INSPECTION CHECKLIST

Room Number: _____

ITEM	YES	NO	NA	COMMENTS
28. Friable asbestos absent	☐	☐	☐	____ _____
29. Step-ladder available for out-of-reach items	☐	☐	☐	____ _____
30. "No Eating/Drinking/Smoking" signs posted	☐	☐	☐	____ _____
E. WASTE CONTAINERS				
31. "Glass" refuse containers labelled	☐	☐	☐	____ _____
32. "Glass" segregated from general refuse	☐	☐	☐	____ _____
33. Needles and sharps in "Sharps" container	☐	☐	☐	____ _____
34. Bulk solvent-waste containers closed and labelled	☐	☐	☐	____ _____
■ chlorinated and non-chlorinated segregated	☐	☐	☐	____ _____
35. Bulk solvent-waste containers stored in flammable storage cabinet	☐	☐	☐	____ _____
36. Recyclable solvents segregated	☐	☐	☐	____ _____
37. Interim solvent waste containers closed and <1 litre	☐	☐	☐	____ _____
38. Ethidium bromide waste segregated	☐	☐	☐	____ _____
39. Radioactive waste labelled appropriately	☐	☐	☐	____ _____
40. Microbiological waste packaged in orange bags and autoclaved;	☐	☐	☐	____ _____
■ manifest tag completed	☐	☐	☐	____ _____
41. Pathological waste packaged in black bags	☐	☐	☐	____ _____
■ manifest tag completed	☐	☐	☐	____ _____
42. Risk group "4" animal waste, human anatomical, and human blood and body fluids packaged in yellow bags and autoclaved.	☐	☐	☐	____ _____
■ manifest tag completed	☐	☐	☐	____ _____
■ stored in freezer	☐	☐	☐	____ _____
43. Photographic chemical waste procedures followed.	☐	☐	☐	____ _____
44. Are you aware of UBC's Chemical Exchange Program?	☐	☐	☐	____ _____
F. COMPRESSED GAS CYLINDERS				
45. Secured to wall or bench with belt or chain	☐	☐	☐	____ _____
46. Lecture bottles stored upright or slanted/secure	☐	☐	☐	____ _____
G. FUME HOODS				
47. Sash at recommended height and air flow on	☐	☐	☐	____ _____
48. Area within and under hood tidy	☐	☐	☐	____ _____
49. Carcinogens permitted	☐	☐	☐	____ _____
H. ELECTRICAL APPARATUS				
50. Vacuum pumps stored safely and belts guarded	☐	☐	☐	____ _____
51. Refrigerator spark-proof (or "***NO Flammables***" sign posted & flammables are absent)	☐	☐	☐	____ _____

LABORATORY INSPECTION CHECKLIST

Room Number: _____

ITEM	YES	NO	NA	COMMENTS
52. Frayed or cracked electrical cords absent	☐	☐	☐ ____	_____
53. Make-shift wiring absent	☐	☐	☐ ____	_____
I. RUBBER OR PLASTIC TUBING				
54. Cracked/brittle/pinched tubing absent	☐	☐	☐ ____	_____
55. Water hoses wired at all connectors	☐	☐	☐ ____	_____
56. Water taps safeguarded against "suck-back" (or "***NO TUBING"*** sign posted)	☐	☐	☐ ____	_____
J. CHEMICAL LABORATORIES				
57. Solvent storage cabinet available and closed	☐	☐	☐ ____	_____
58. Solvent containers closed and labelled	☐	☐	☐ ____	_____
59. Solvent containers ***outside*** safety cabinet, < 25 L	☐	☐	☐ ____	_____
60. Solvent-still contents labelled	☐	☐	☐ ____	_____
61. Reagent chemicals stored securely (lips on shelves or doors on cupboards)	☐	☐	☐ ____	_____
62. Chemical containers intact.	☐	☐	☐ ____	_____
63. Ethers stored (& used) out of direct sunlight	☐	☐	☐ ____	_____
64. Ether containers display opening date	☐	☐	☐ ____	_____
65. Peroxide-forming chemicals (e.g. ethers) checked for peroxides (3 to 12 months)	☐	☐	☐ ____	_____
66. Labels compliant with WHMIS	☐	☐	☐ ____	_____
67. Chemical labels intact, legible, not overwritten	☐	☐	☐ ____	_____
68. Cleaning baths labelled	☐	☐	☐ ____	_____
69. Carcinogens/Corrosives/Flammables labelled	☐	☐	☐ ____	_____
70. Incompatible materials separated	☐	☐	☐ ____	_____
71. Perchloric acid absent/used in special wash-down fume hood	☐	☐	☐ ____	_____
K. RADIATION/LASER LABORATORIES				
72. "Caution Radiation Area" sticker on door	☐	☐	☐ ____	_____
73. Laser or X-ray warning signs on door	☐	☐	☐ ____	_____
74. Names of two current lab personnel on emergency sticker	☐	☐	☐ ____	_____
75. "Caution Radioactive Materials" on isotope storage (i.e. refrigerator/freezer)	☐	☐	☐ ____	_____
76. "Rules for Working with Radioisotopes an Intermediate/Basic Laboratory" sign posted	☐	☐	☐ ____	_____

LABORATORY INSPECTION CHECKLIST

Room Number: _____

ITEM	YES	NO	NA	COMMENTS
77. "Hot sinks" marked with radiation tape	☐	☐	☐ ____	_____
78. Radioisotope license and amendments posted	☐	☐	☐ ____	_____
79. Dosimeters worn	☐	☐	☐ ____	_____
80. Bench liner not damaged or worn	☐	☐	☐ ____	_____
81. Contamination Control Documented (Wipe tests)	☐	☐	☐ ____	_____
82. Purchase, Usage Disposal Records Maintained	☐	☐	☐ ____	_____
83. Charged Survey Meter Battery	☐	☐	☐ ____	_____
84. Appropriate personal protection used	☐	☐	☐ ____	_____
L. BIOHAZARDOUS LABORATORIES				
85. Biological hazard signs posted	☐	☐	☐ ____	_____
86. Biological saferty cabinets certified	☐	☐	☐ ____	_____
87. Biological saferty cabinets clean and tidy	☐	☐	☐ ____	_____

PLEASE ENSURE THAT CORRECTIONS ARE MADE BY *:* _____
Date

Supervisor: _____

(*Please sign after violations have been acted upon*)

UPON CORRECTION OF VIOLATIONS, PLEASE RETURN TO THE SAFETY PROGRAM ADMINISTRATOR

OFFICE AREA INSPECTION CHECKLIST

Area or room #: _____ **Date:** _____

Name(s) of Inspector(s): _____

FILING CABINETS / SHELVING UNITS			
1. Cabinets are closed when not in use	YES ❒	NO ❒	N/A ❒
2. Only one drawer is open at a time	YES ❒	NO ❒	N/A ❒
3. Cabinets are located so that drawers do not open into aisles	YES ❒	NO ❒	N/A ❒
4. Cabinets / shelves are loaded from the bottom up	YES ❒	NO ❒	N/A ❒
5. Cabinets / shelving are bolted together, to the floor, or to the wall	YES ❒	NO ❒	N/A ❒
6. Heavy objects are not stored on top of tall cabinets / shelves	YES ❒	NO ❒	N/A ❒

Comments

FLOORS / AISLES			
7. Aisles are unobstructed and allow visibility and movement	YES ❒	NO ❒	N/A ❒
8. Main aisles are at least 3 feet wide (allows two way travel)	YES ❒	NO ❒	N/A ❒
9. Door ways are unobstructed and allow visibility and movemen	YES ❒	NO ❒	N/A ❒
10. Floors / carpets are free from holes, loose edges, worn areas or depressions	YES ❒	NO ❒	N/A ❒
11. Materials stored on the floor are away from doors / aisles and are < 3 ft high	YES ❒	NO ❒	N/A ❒
12. Lighting is adequate in aisles and walkways	YES ❒	NO ❒	N/A ❒

Comments

WALLS			
13. Notice / marking boards are securely fastened to walls	YES ❒	NO ❒	N/A ❒
14. Pictures are securely fastened to walls	YES ❒	NO ❒	N/A ❒

Comments

STAIRS			
15. Doors opening into pedestrian traffic are posted with prominent caution signs	YES ❒	NO ❒	N/A ❒
16. Stairwells are clear of materials, equipment and debris	YES ❒	NO ❒	N/A ❒
17. Stairs and handrails are in good repair and secure	YES ❒	NO ❒	N/A ❒
18. Lighting is adequate in stairways	YES ❒	NO ❒	N/A ❒

Comments

OFFICE AREA INSPECTION CHECKLIST

FIRE SAFETY / EMERGENCY EVACUATIONS			
19. Access to fire extinguishers and pull stations is clear	YES ❒	NO ❒	N/A ❒
20. Locations of fire extinguishers /pull stations are clearly identified	YES ❒	NO ❒	N/A ❒
21. Fire extinguishers have been inspected within the last year and pins are secure	YES ❒	NO ❒	N/A ❒
22. Emergency procedures and evacuation plans are current and posted	YES ❒	NO ❒	N/A ❒
23. Emergenc y telephones numbers are close to phones	YES ❒	NO ❒	N/A ❒
24. Smoke and fire alarms are in place and operational	YES ❒	NO ❒	N/A ❒
25. Emergency exits are not blocked with materials, equipment or shrubbery	YES ❒	NO ❒	N/A ❒
26. Emergency exits open easily	YES ❒	NO ❒	N/A ❒
27. Emergency lighting units are provided for the workplace and exit paths	YES ❒	NO ❒	N/A ❒
28. Emergenc y lighting is operational	YES ❒	NO ❒	N/A ❒
29. All flammable liquids / materials are labeled and properly stored	YES ❒	NO ❒	N/A ❒

Comments

SAFETY INFORMATION			
30. Safety Committee minutes are posted in visible area accessible by all staff	YES ❒	NO ❒	N/A ❒
31. University and Department Safety Policies are current and posted	YES ❒	NO ❒	N/A ❒
32. Completed workplace inspection forms are posted	YES ❒	NO ❒	N/A ❒
33. Safety manual, work procedures, MSDS are easily accessible by all employees	YES ❒	NO ❒	N/A ❒

Comments

FIRST AID			
34. First aid stations are clearly identified with adequate signage	YES ❒	NO ❒	N/A ❒
35. Equipment and supplies are regularly replace / replenished	YES ❒	NO ❒	N/A ❒

Comments

PERSONAL SECURITY			
36. Burglar alarms are in place and operational	YES ❒	NO ❒	N/A ❒
37. Parking spots and walkways are appropriately lighted	YES ❒	NO ❒	N/A ❒
38. Reception area is controlled and restricts visitor access to main office areas	YES ❒	NO ❒	N/A ❒
39. There is signage that states all visitors must check in with Reception	YES ❒	NO ❒	N/A ❒
40. There is secured access for staff working after general office hours	YES ❒	NO ❒	N/A ❒
41. Staff working alone are encouraged to use Safewalk	YES ❒	NO ❒	N/A ❒

Comments

OFFICE AREA INSPECTION CHECKLIST

ENVIRONMENT			
42. Work areas are free of tripping, falling, or colliding hazards	YES ❒	NO ❒	N/A ❒
43. Work areas have adequate lighting	YES ❒	NO ❒	N/A ❒
44. Files and books are stacked properly to prevent collapse	YES ❒	NO ❒	N/A ❒
45. Objects do not protrude into traffic paths	YES ❒	NO ❒	N/A ❒
46. Work areas are free of poor air quality	YES ❒	NO ❒	N/A ❒
47. Work areas are free of excessive or irritating noise	YES ❒	NO ❒	N/A ❒
48. Work areas are free of static electricity	YES ❒	NO ❒	N/A ❒
49. Work related back / shoulder / wrist problems do not exist	YES ❒	NO ❒	N/A ❒
50. Materials / equipment no longer required are removed to reduce clutter	YES ❒	NO ❒	N/A ❒

Comments

EQUIPMENT / ELECTRICAL			
51. Metal equipment are free of burrs or sharp edges	YES ❒	NO ❒	N/A ❒
52. Paper cutter blade is down when not in use	YES ❒	NO ❒	N/A ❒
53. Procedure is posted by photocopier for changing toner	YES ❒	NO ❒	N/A ❒
54. Photocopy machines are located in ventilated or large open spaces	YES ❒	NO ❒	N/A ❒
55. Electrical cords are not run over heat sources, through doorways or across aisles	YES ❒	NO ❒	N/A ❒
56. Access to electrical panels / switch gears are clear	YES ❒	NO ❒	N/A ❒
57. Frayed or damaged electrical cords/outlets/connections are removed from service	YES ❒	NO ❒	N/A ❒
58. Electrical cords are secured to prevent tripping hazards	YES ❒	NO ❒	N/A ❒
59. Fans are guarded and are secure on surfaces	YES ❒	NO ❒	N/A ❒

Comments

WORKER AWARENESS			
60. Workers know where the area first aid kit is located	YES ❒	NO ❒	N/A ❒
61. Workers know who the area first aid attendant is and how to contact him/her	YES ❒	NO ❒	N/A ❒
62. Workers can identify their safety representative on the Safety Committee	YES ❒	NO ❒	N/A ❒
63. Workers know the location of and how to use fire extinguishers / pull stations	YES ❒	NO ❒	N/A ❒
64. Workers know the evacuation procedures and where to gather outside	YES ❒	NO ❒	N/A ❒
65. Workers know how to report an accident or a hazard	YES ❒	NO ❒	N/A ❒

Comments

SUPERVISORY INSPECTION DELEGATION SHEET

Inspection Area: _____

Inspection Date or Frequency: _____

Supervisor Responsible: _____

Inspection Delegate: _____

Supervisors have the primary responsibility for the conducting monthly inspections of their areas. This management function may be delegated by the supervisor to another qualified person who works in the area and is knowledgeable of the work and related hazards of the area. The supervisor retains the overall responsibility for the safe and compliant operation of the area.

The inspection delegate acting for the *insert department or area* is *insert delegate's name, title and phone number.*

Insert delegate's name has agreed to fulfill the role and responsibilities of conducting supervisory inspections on behalf of *insert supervisor's name and title.*

Delegate's Signature	*Supervisor's Signature*
Date	Date

***Please submit completed form to Departmental Safety Program Administrator.*

ACCIDENT INVESTIGATIONS
Element 5

I. PURPOSE

The purpose of incident/accident reporting and investigations is to prevent a recurrence of the hazardous condition causing the event.

II. PULP AND PAPER CENTRE REQUIREMENTS

The WCB/WORKSAFE BC requires the Pulp and Paper Centre to investigate any accident which:

- resulted in injury requiring treatment by a medical practitioner
- resulted in death or critical condition with a serious risk of death
- involved a major structural failure or collapse
- involved the major release of a toxic or hazardous substance
- was a blasting accident
- did not result in an injury but had the potential for causing serious injury (near miss).

The Pulp and Paper Centre is also required to report to the Risk Management Services (RMS) Department every:

- work-related injury. The report must be made within 24 hours of the occurrence.
- disabling occupational disease or allegations of an occupational disease. The report must be made within 24 hours of receiving the worker's report of the disease.
- work-related death. The report must be made immediately.

The RMS Department is responsible for reporting this information to the WCB/WORKSAFE BC.

To meet these requirements, the Pulp and Paper Centre has developed and implemented a program for the reporting and investigation of accidents. The Program's focus is on finding solutions and not on placing blame. The success of the program depends on:

- accidents being reported by workers and co-workers(see page 6-8 / 6-11, accident/incident report forms)
- investigations being conducted in accordance with established investigation procedures (see page 6-5)
- corrective action taken to prevent recurrence.

Investigation teams consisting of an area supervisor and an employee representative will perform investigations. Each investigator is required to be trained on investigation procedures as well as be knowledgeable of the work performed at the time of the accident.

The Pulp and Paper Centre supervisors and worker representatives assigned to conduct investigations are:

NAME	TITLE	SECTION
George Soong		

For areas that are jointly occupied, investigations shall be jointly conducted by one member representing each department.

Management will provide all tools and resources necessary for the Program to be effective. These include:

- accident investigation training for investigators
- time made available to allow investigators to complete their duties
- quick action on recommended changes to job procedures or physical conditions to prevent recurrence of similar situations.

III. ACTIONS

The Director, Pulp and Paper Centre:

- Ensure that accidents are reported and investigated as required by WCB/WORKSAFE BC and internal requirements.
- Assign responsibility for the development, implementation and maintenance of the accident reporting and investigation program.
- Review investigation reports.
- Provide investigators with the necessary tools and resources to function effectively.
- Communicate action plans and management decisions down through their respective organization.

Departmental Safety Program Administrator:

- Ensure that accidents reported are conducted as required.
- Monitor the ARIP for compliance with WCB/WORKSAFE BC and internal requirements.
- Review investigation reports.
- Forward a copy of the investigation report to Risk Management Services Department.
- Communicate recommendations to management.
- Communicate action plans and management decisions down through their respective organization.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):

- Provide recommendations for the development and implementation of the program for reporting and investigating accidents.
- Promptly initiate an investigation occurring within the area of responsibility.
- Cooperate and participate in accident investigations as required.
- Complete proper WCB/WORKSAFE BC forms.
- Conduct special inspections when required.
- Forward copies of investigation reports to the local safety committee and the DSPA for review.
- Communicate recommendations to the DSPA.
- Inform affected employees of the occurrence.
- Implement corrective action.
- Communicate action plans and management decisions through their respective organization.

Local Safety Committee Members:

- Participate in investigations when required.
- Review investigation reports.
- Communicate committee recommendations to the DSPA and senior management.
- Follow up on suggestions or concerns made.

Workers and Students:

- Report all occurrences to the immediate supervisor.
- Participate in investigations if required.
- Cooperate with investigators.

IV. REFERENCES

Due Diligence, page ix
Accident Reporting Procedures, page 5-4
Accident Investigation Procedures, page 5-5
UBC faculty & staff incident / accident report form, page 5-8
UBC student & visitor incident / accident report form, page 5-11
Records and Statistics, page 10-1

V. AUTHORITIES

WCB/WORKSAFE BC Regulation 3.4 and 3.9
UBC Policy #7 Safety

INCIDENT/ACCIDENT REPORTING INSTRUCTIONS

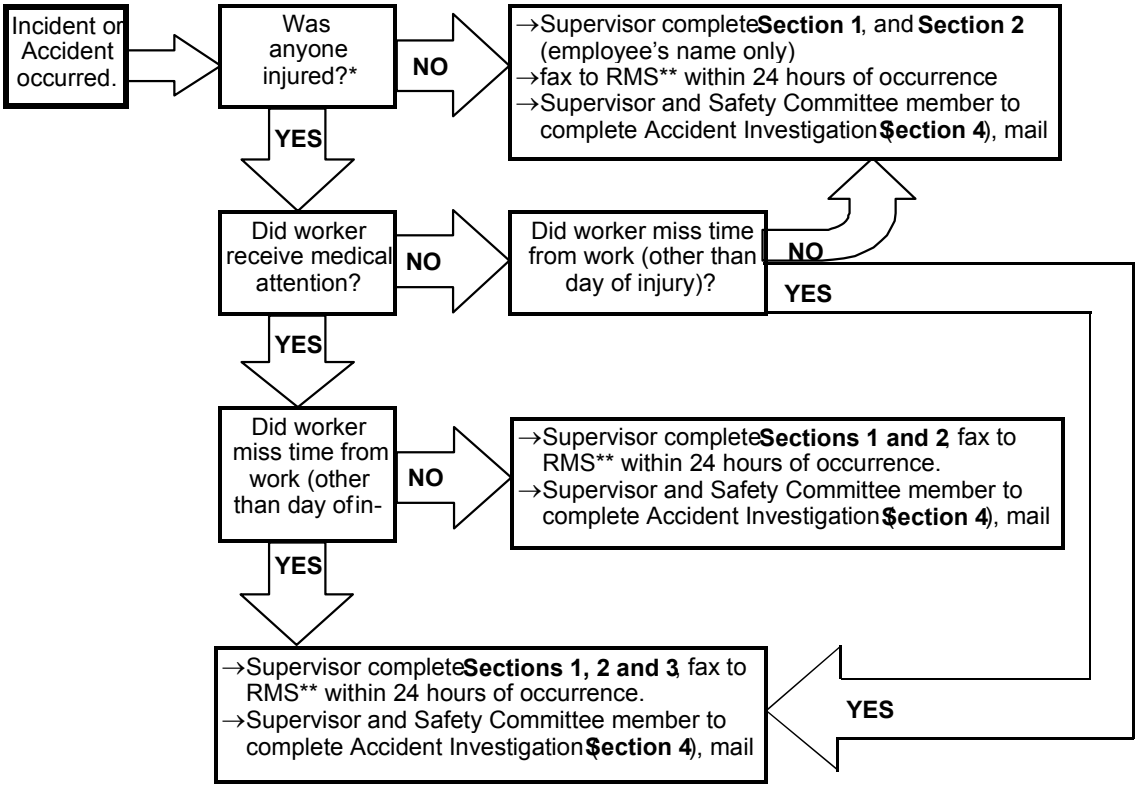
UBC's Faculty & Staff Incident/Accident Report must be completed for every incident or accident, even if there were no injuries sustained*. Any event that occurred that involved injury to a person or damage property, or had the potential to do so, must be reported to Risk Management Services within 24 hours of occurrence. Use the flow chart below as a guide to completing the form.

For serious accidents which:

- ◊ resulted in death or critical condition with a serious risk of death, or
- ◊ involved an explosion, major structural failure or collapse of a building, scaffolding, hoist, tower temporary construction support system, or excavation, or
- ◊ involved the release of a toxic or hazardous substance

then notify 9-1-1 and Risk Management Services at 822-2029 immediately and seal the area (do not begin a clean-up as on site evidence must be preserved).

In cases where an injury occurred, the employee should complete the Worker's Report of Injury Form 6A (available from supervisor or administrator).



**Note: If the injured person is a student or visitor to campus, complete the UBC Student & Visitor Incident/Accident Report instead.*

***Dept of Risk Management Services, 50-2075 Wesbrook Mall, General Services Administration Building.*
Phone: WCB Claim Assistant 822-8759 or RMS Main Office 822-2029. Fax: 822-1637.

Preparation

As a measure of preparedness, always have a ready-to-use Investigation kit prepared and available in advance. The kit should contain the following items:

- clipboard
- notepad
- pens/pencils
- measuring tape
- camera, film, flash
- accident investigation forms
- flashlight
- do-not-enter tape.

Gathering Information

1. Enter the accident scene cautiously.

2. Ensure the injured are cared for properly before starting the investigation.

3. Secure the scene to minimize the risk of further injury.

4. Keep the accident scene as undisturbed as possible.

5. If possible, take pictures of the scene or provide a diagram to aid in better describing the accident.

6. Gather and record all evidence.

7. Interview all persons involved (injured, witnesses, first aid attendant, supervisors, etc.) See interviewing techniques on next page.

Evaluation

8. Be objective - do not start with a fixed opinion.

9. Set out the events in chronological order.

10. Consider what evidence is direct, circumstantial or hearsay.

11. Analyze the information to determine the root cause(s) and the contributory cause(s).

    - ROOT CAUSE - if this did not happen, then the particular accident would **not** have occurred.

    - CONTRIBUTORY CAUSE - this could have caused the accident, but by being removed **will not** eliminate the chance of the accident occurring.

1. Do not draw conclusions on the first basic cause found.

2. Make recommendations to address all contributing factors. Solutions should be developed to treat the basic causes of the accident, not the symptoms.

Post-Investigation

3. Complete the Accident Investigation Report.

4. Submit a copy of the completed Accident Investigation Report to the Departmental Safety Program Administrator for review and distribution.

5. Correct any unsafe condition or act if possible. Make sure temporary safety measures are taken whenever permanent or complete correction will require additional time. For items that require a major expenditure, write an explanation of the hazard and include a description of the impact of further accidents.

6. Post a copy of the Accident Investigation Report form in an area accessible by all departmental staff.

Investigation Follow-Up

7. For all hazards, ensure that corrective action or control has been taken.

8. Be persistent and regularly follow-up on items that require corrective action. Consult the Departmental Safety Program Administrator when necessary.

9. Periodically review corrective actions or control methods.

10. Ensure all reports are properly posted, distributed and filed.

Interview Techniques

- Interview persons individually and as soon as possible after the accident.

- Put the interviewee at ease by reassuring him/her that the investigation's main purpose is to find causes so that the accident will not happen again. The investigation is not to find fault or blame and that he/she will not get in trouble for anything that they say.

- Ask the interviewee to relate his/her account of the accident. Listen closely and carefully, and do not interrupt at this time.

- Ask the interviewee to relate his/her account of the accident again and this time take notes. Explain to the interviewee that you will be taking down notes to ensure that the report will be related correctly. Allow the interviewee to see what is written down.
- Ask only necessary and specific questions in a friendly constructive manner. Phrase each question in a way that cannot be answered simply with a yes or no. Avoid any leading questions.
- Review the recorded notes with the interviewee to ensure the interviewee agrees with the interpretation of his/her story.
- Ask the interviewee for his/her suggestion on how the accident could have been prevented.
- Encourage the interviewee to contact you if he/she should recall more information at a later date.
- Always thank the interviewee for his/her cooperation and reassure him/her that his/her assistance is important to the investigation process.

UBC FACULTY & STAFF INCIDENT/ACCIDENT REPORT

This form is to be completed by the worker's supervisor.

1) Fax page 1 (YELLOW) including the Worker's Report of Injury to Employer (WCB/WORKSAFE BC Form 6A) and First Aid Report (Form 7A) to Health, Safety & Environment (HSE) at 604-822-0572 within 24 hours of injury.
2) Complete page 2 (BLUE) within 3 working days after the incident has been reported.

Do NOT distribute page 1 (YELLOW) as it contains confidential information that must be collected to initiate a WCB/WORKSAFE BC claim.
For more information contact the RMS Claims Assistant 604-822-8759.

1

Was the Accident:
- ☐ **No medical treatment, no time loss – complete only sections 1, 2 (employee's name, union and crew number only) and 4.**
- ☐ **Medical treatment (visit doctor, no days off work) – complete sections 1, 2 and 4. (Include Employee's Report Form 6A.)**
- ☐ **Time Loss (days off work) – complete sections 1, 2, 3 and 4. (Include Employee's Report Form 6A.)**

Date & Time of Incident/Accident: (y/m/d) AM/PM	**OR**	Period of Exposure Resulting in Industrial Disease From: (y/m/d) To:	Location of Accident (Bldg, Rm #)
Name of Person First Reported to:	Date and Time Reported: (y/m/d) AM/PM	Supervisor of worker involved: Phone # Email:	Date and Time Reported: (y/m/d) AM/PM
Worker's Department	Worker's Job Title	Was First Aid Given? ☐ Yes ☐ No If **YES** -is First Aid Report included: ☐ Yes ☐ No	Name of First Aid Attendant

Describe fully what happened. If more space is required, attach an additional page. Attach additional information, diagrams or photos where possible.

Body Part Injured: ☐ Left ☐ Right

2

☐ Mr. ☐ Mrs. ☐ Miss ☐ Ms. ☐ Dr.	Employee's Name (**Family/Given**)	Union/Association	Crew #
Worker's Home Address: Street Name/No. Town/City			Postal Code
Telephone Number (Area Code & Number)	Social Insurance Number	Birthdate (y/m/d) / Age (Yrs)	BC Care Card No.
Date Joined UBC (y/m/d) / Started Current Position (y/m/d)	Employment Status: ☐ Full time, on-going ☐ Temporary ☐ Part time ☐ Seasonal ☐ Casual ☐ Other_____	Weight: ☐ lbs ☐ kg	Height: ☐ in ☐ cm
Name of Doctor or Hospital Visited	Doctor or Hospital Address:		
Name of Witness(es) 1. 2.	Address / Phone #		Do witnesses confirm worker's statement? ☐ Yes ☐ No

Were the worker's actions at the time of injury for the purpose of the University's business?
☐ Yes ☐ No, If no, explain

Were the activities part of the worker's regular work?
☐ Yes ☐ No, If no, explain

Is there any reason to feel that the injury did not occur as stated?
☐ No ☐ Yes, If yes, explain

Are you aware of any previous pain or disability in the area of the present injury?
☐ No ☐ Yes, If yes, explain

Was any person not employed by UBC responsible for the injury?
☐ No ☐ Yes, Give details, name & address of person.

3

Wage information of injured worker
(If NO time loss, skip this section and go to Sec. 4)

Show normal work week by entering hours per work day

	S	M	T	W	T	F	S
Wk #1							
Wk #2							

Worker's Exact Gross Wage (provide one only)
Hourly Employee: $_____/ hour
Monthly Employee: $_____/month

Additions to wages (provide details)
(ie shift premiums, holiday pay, meals . . .)

Date and time last worked after injury: (y/m/d) AM/PM

Normal Work Hours:
From: To:

Number of days in Sick bank:

Does the worker work a fixed shift rotation? ☐ Yes ☐ No If Yes, describe:	Shift Start Date: (y/m/d)	Has Employee returned to work? ☐ Yes ☐ No	If employee has returned to work -when? (y/m/d)

THE FIRST PAGE IS CONFIDENTIAL AND IS ONLY COLLECTED BY HSE TO INITIATE A WCB/WORKSAFE BC CLAIM AS REQUIRED BY LAW. DO NOT DISTRIBUTE SECTIONS 2 & 3 OTHER THAN TO HEALTH, SAFETY AND ENVIRONMENT.

Date Report Completed (y/m/d)	Supervisor's Signature	Supervisor's Name (Please Print)

Page 1 of 2 - Revised May 2001(HSE 5/97)

UBC FACULTY & STAFF INCIDENT/ACCIDENT REPORT

The incident/accident must be investigated by the worker's supervisor and a worker member of the Local Safety Committee within 3 working days of the incident or accident. Complete this page and distribute as follows:

1) Fax a copy to Risk Management Services 604-822-0572;
2) Send the original to the Department Head;
3) Send a copy to the local Safety Committee;
4) Post a copy at the work site.

1	**Was the Accident:** ☐ **No medical treatment, no time loss – complete only sections 1, 2 (employee's name only) and 4.** ☐ **Medical treatment (visit doctor, no days off work) – complete sections 1, 2 and 4. (Include Employee's Report Form 6A.)** ☐ **Time Loss (days off work) – complete sections 1, 2, 3 and 4. (Include Employee's Report Form 6A.)**		
Date & Time of Incident/Accident: (y/m/d) AM/PM	**OR**	Period of Exposure Resulting in Industrial Disease From: (y/m/d) To:	Location of Accident (Bldg, Rm #)
Name of Person First Reported to:	Date and Time Reported: (y/m/d) AM/PM	Supervisor of worker involved: Email: Phone #	Date and Time Reported: (y/m/d) AM/PM
Worker's Department	Worker's Job Title	Was First Aid Given? ☐ Yes ☐ No If **YES** -is First Aid Report included: ☐ Yes ☐ No	Name of First Aid Attendant

Describe fully what happened. If more space is required, attach an additional page. Attach additional information, diagrams or photos where possible.

Body Part Injured: ☐ Left ☐ Right

4	**Accident Investigation** (use reverse of page if more space is required)	Was the accident site visited? Yes ☐ No ☐

Select one or more causes from each category

Task	**Environment**	**Equipment**
☐ Lifting ☐ Twisting the trunk ☐ Lifting overhead ☐ Heavy load - Lift ☐ Heavy load - Push ☐ Heavy load - Pull ☐ Awkward load to handle ☐ • Hot load ☐ Sharp edges on load ☐ Repetitive motion • Stooping ☐ Extended reach ☐ Incorrect tool ☐ Rushing ☐ Procedures not followed ☐ No "Task" factors ☐ Other (Specify)_____	☐ Limited space / constrained posture ☐ Housekeeping ☐ Variations in floor surface ☐ Cold / Hot ☐ Wet / slippery ☐ Vision obstructed ☐ Personal Protective Equipment restrictions ☐ No "Environment" factors ☐ • Other (Specify)_____	☐ Incorrect equipment ☐ Defective equipment ☐ High force requirement ☐ Preventative maintenance inadequate ☐ Signage / labeling inadequate ☐ Material / equipment failure ☐ Equipment vibration ☐ No "Equipment" factors ☐ Other (Specify)_____
	Organizational	**Human**
	☐ Poor Communication ☐ Excessive workload ☐ Job / skill training inadequate ☐ Planning inadequate • Staffing inadequate ☐ Poor job design ☐ No Standard Operating Procedure available ☐ No "Organizational" factors ☐ Other (Specify)_____	☐ Fatigue ☐ Illness ☐ Knowledge / skill / experience lacking ☐ Language difficulties ☐ Personal distraction ☐ Physical limitations ☐ Pre-existing condition ☐ No "Human" factors ☐ Other (Specify)_____

Incorporating the above factors, describe the cause of the accident:

Describe the recommended corrective actions to be implemented to prevent recurrence. These actions should encompass all workers facing similar risks.

Person(s) responsible for planned corrective actions	Date to complete corrective actions: (y/m/d)	

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UBC FACULTY & STAFF INCIDENT/ACCIDENT REPORT

INSTRUCTIONS

SECTION 1 - Description of Event
This section is to be completed for **all** incidents/accidents.

Was the Accident:
(This section is very important as it determines what other sections may need to be completed)
Note: For accidents that:
- resulted in serious injury or death;
- involved an explosion, major structural failure;
- involved the major release of a hazardous substance; or,
- involved a diving accident.

Immediately notify 9-1-1 and RMS at 604-822-2029.

- **No Medical Treatment, No Time Loss:**
  The employee did not seek medical attention other than first aid and did not take time off work past the date of injury. Include incidents with the potential for injury.
- **Medical Treatment:**
  The employee visited a doctor or received medical treatment, but did not take any time off work past the date of injury.
- **Time Loss:**
  The employee needed time off work past the date of injury. In this case, the employee must seek medical treatment.

  All incidents/accidents that involve Medical Treatment (other than first aid) or Time Loss will be reported to WCB/WORKSAFE BC.

Date & Time of Incident/Accident **OR** Period of Exposure Resulting in Industrial Disease:
Complete one **OR** the other, not both. If you do not know the date, write "worker alleges" or "unknown". For repetitive strain or accumulative conditions, note the date that the pain was first felt and indicate to "present", unless the pain has ceased.

Location of Accident:
List both the building name and the room number. If outside, describe the location as precisely as possible.

Was First Aid Given?
If First Aid completed, please include with report.

Describe fully what happened:
Describe the incident/accident including as many details as possible, such as the approximate weight of the objects involved and the frequency or length of the activity. Attach an additional page if more space is required. **Do not include any names in this section. Refer to the injured worker as "the worker" or "the employee".**

SECTION 2 - Personal Information of Injured Worker
This section is to be completed only if the employee sought medical attention (other than first aid) or has missed time from work. Personal information is required by WCB/WORKSAFE BC. Please complete all sections as directed.

Name of Doctor or Hospital Visited:
Complete if known. **Note: An employee must seek medical attention to file a WCB/WORKSAFE BC Claim.**

Name of Witness(es):
List people who actually SAW the injury take place as well as a contact phone number for each. For example, someone who had his/her back turned toward the employee as the injury happens is not considered a witness.

Do witnesses confirm worker's statement?
If you have not interviewed the witness, please write in "unknown" or "not interviewed".

SECTION 3 - Wage Information of Injured Worker
Complete Section 3 if the employee missed time from work due to injury.

Show normal workweek:
Please indicate the number of hours each day the employee works each day. If employee works a fixed schedule, only one week needs to be shown. If the employee's work hours vary from week to week (i.e. casual or student employees) please indicate the shifts worked in the two weeks prior to the date of injury.

Example of a fixed work schedule

	S	M T		W	T	F	S
Wk#1							
Wk#2							

Example of a variable work schedule

	S	M T		W	T	F	S
Wk#1	-	7	7	7	-	7	7
Wk#2	7	7 - 7			7	7 -	

Does the worker work a fixed shift rotation?
An example of a shift rotation is an 8-day cycle - 2 days, 2 nights, 4 days off. Please describe shift rotation and the start date of the cycle that the employee was in when the injury occurred.

Worker's exact gross wage:
Provide the exact wage (no estimates). For hourly employees, indicate only the wage/hour only. For monthly paid employees, indicate the gross monthly wage.

Date and time last worked after injury:
This is usually the same as the date and time of the injury if the employee leaves work immediately. If the employee works beyond the injury date or time, please indicate the first absence following the injury. This information may need to be provided to WCB/WORKSAFE BC claims assistant after the initial report has been submitted. Please fax an amended form with the appropriate time loss information to HSE when it becomes available.

Has employee returned to work?
Please provide date or estimated date if known.

Additions to wages:
Describe any shift premiums, i.e., amount paid, what time it applies (full or partial shift).

Normal work hours:
Give the regularly scheduled shift, i.e. 7:30am to 3:30pm.

Number of days in sick bank:
If the exact number is unknown, please provide an estimate.

UBC FACULTY & STAFF INCIDENT/ACCIDENT REPORT

Section 4- Accident Investigation

Objective: To determine the cause of an accident and to prevent future occurrence

To be conducted by:
- Direct supervisor of the employee.
- Worker safety representative from the Health and Safety Committee.
- May need additional people if specific information is required about specialized types of work or hazards.

To be performed:
- At the actual incident site/location.
- As soon as possible after the incident.
- As accurately as possible; include weights, heights, distances of objects (include pictures if applicable).

Steps:
- Secure the scene.
- Care for the injured.
- Gather and record data.
- Interview all persons involved (witnesses, co-workers, supervisors)
- Check training records, safety analyses, risk assessments previous done for the site.
- Review history- check if there are similar incident at the site or involving employee.

INSTRUCTIONS

Complete Section 4 (Page 2):
Select all applicable factors for each of the five categories listed. There should be a minimum of five boxes checked.

Using the factors identified, determine the basic causes of the incident.

Develop recommendations for each identified cause and assign a completion date.

Attach additional pages if required.

The individual department is responsible for completion and follow-up of recommendations.

Additional Help?
Contact RMS office 604-822-2029 to arrange for assistance from an RMS officer.

UBC STUDENT AND VISITOR INCIDENT/ACCIDENT REPORT FORM

This report is to be completed by, or on behalf of, Visitors to UBC Campus and UBC Students who have been injured on UBC premises.

The personal information below should pertain to the injured/involved party.

		Date of Report (m/d/y) _____/_____/_____
Last Name	First Name	Telephone:
Street Address	City	Postal Code
Status: ☐ Visitor ☐ Student ☐ Other_____	Severity of Injury: ☐ First Aid only ☐ Medical treatment (doctor, hospital) Mode of Transportation to Medical Facility:	
Department Visited	Date and Time of Incident/Accident (m/d/y) _____/_____/_____ _____:_____ am / pm	

Describe the exact location of accident. (Include building name and room number, or if outside describe area in detail.)

Describe the events leading up to and including the incident/accident in the words of the injured party, if possible. Include details of any injuries (Use reverse if necessary):

Eye Witness: ☐ Yes ☐ No (Please provide witness' name and telephone number, if possible.)

Incident/Accident Reported to: Title: Phone #
Name:

If this report is completed by someone other than the injured/involved party, please provide the following information:

Your Name	Tel #	Relationship to injured party

Distribute Report as follows:

1) **Original to Department***, *with copies to*:
2) Building Safety Committee, if incident occurred within or near building
3) Risk Management Services (50-2075 Wesbrook Mall, Vancouver, V6T 1Z1. Fax: 822-6650)
4) Risk and Insurance Manager, (3rd flr 2075 Wesbrook Mall, Vancouver. Fax 822-1224)

Reviewed by (Safety Committee Members)	Date (m/d/y)	Comments and/or Further Action

If you have any questions, please call Risk Management Services at 822-8759 or 822-2029. *June 1997*

SAFE WORK RULES AND PROCEDURES
Element 6

I. PURPOSE

Safe work rules and procedures are intended to provide employees with guidance and direction to perform their work safely. The elimination or control of hazards inherent to certain tasks is achieved through the analysis and the detailed description of how the task is to be done.

II. PULP AND PAPER CENTRE REQUIREMENTS

The WCB/WORKSAFE BC requires the Pulp and Paper Centre to provide appropriate written instructions for all tasks to workers. Written safe work rules and procedures should be developed to either eliminate or effectively control the hazards in the department. To meet this requirement, senior management and supervisors have formulated site specific safety rules and safe work procedures.

Safe work procedures, as a minimum, are formulated to meet WCB/WORKSAFE BC, UBC and if applicable, the manufacturer's requirements. In addition, the Departmental Safety Program Administrator, supervisors and Safety Committee review accident and injury statistics on a regular basis to ensure that established rules and procedures are providing the department with the safest work practices. Safety rules are posted in the work areas and specific work procedures are made accessible to all employees in the areas where they apply.

Supervisors ensure that safety rules and safe work procedures are:
- communicated initially to workers during orientation and on-the-job training
- reviewed regularly at staff safety meetings.

Supervisors also ensure that workers are aware of the hazards associated with their work and that they understand how safe work procedures will prevent or minimize injury. All employees are expected to follow established rules and procedures. Supervisors enforce the rules and procedures by immediately correcting any observed unsafe act or condition.

Management will continually provide the necessary resources to ensure that safety rules and safe work procedures are effective. These include:
- orientation and on-the-job training programs
- time made available for workers to develop and review safety rules and procedures.

Departmental Procedures are found in Appendix C – Laboratory/Building Safety Guidelines.

III. ACTIONS

The Director, Pulp and Paper Centre:

- Assign responsibility for the establishment of safety rules and safe work procedures.
- Consider recommendations from the DSPA, supervisors and safety committee.
- Communicate action plans and management decisions through their respective organization.
- Monitor the work activities for compliance with WCB/WORKSAFE BC and internal requirements.
- Provide the tools and resources for developing, implementing and reviewing rules and procedures.

Departmental Safety Program Administrator:

- Ensure safety rules and safe work procedures are established and practicable.
- Monitor the work activities for compliance with WCB/WORKSAFE BC and internal requirements.
- Review accident and injury reports.
- Implement corrective action plans.
- Communicate suggestions for improving rules and procedures to management.
- Communicate action plans and management decisions through their respective organization.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):

- Develop and implement safety rules and safe work procedures.
- Provide orientation and on the job training to workers.
- Review accident and injury reports.
- Communicate suggestions for improving rules and procedures to the DSPA.
- Enforce written safety rules and safe work procedures.
- Consider recommendations from the DSPA, supervisors and safety committee.
- Implement corrective action plans.
- Communicate information and management decisions through their respective organizations.

Local Safety Committee Members:

- Review accident and injury reports.
- Communicate suggestions for improving rules and procedures to **DSPA.**
- Follow up on recommendations.

Workers and Students:

- Follow established safety rules and safe work procedures.
- Report unsafe acts or conditions to the immediate supervisor.

IV REFERENCES

Due Diligence, page ix
Orientation, Training and Supervision of Workers, page 3-1
Orientation Training Guidelines, page 3-5

Department Technical Information and Safe Work Procedures Manual

V AUTHORITIES

WCB/WORKSAFE BC Regulation 3.3 (c)
UBC Policy #7 Safety

FIRST AID AND EMERGENCY SERVICES
Element 7

I. PURPOSE

First aid and emergency services are an important part of the Health and Safety Program. The purposes of these services are to:

- ensure prompt and effective emergency response
- promote speedy recovery and to minimize the effects of injuries or exposures
- provide workers with assistance when required

II. PULP AND PAPER CENTRE REQUIREMENTS

The WCB/WORKSAFE BC requires the Pulp and Paper Centre to provide employees with quick and effective response in the event of injuries or emergencies. The management of the Pulp and Paper Centre is committed to meeting this requirement by providing first aid and emergency services.

The success of first aid and emergency services programs depends on employees knowing what to do in minor and major emergency situations. Supervisors are required to communicate emergency numbers and procedures to workers during orientation training and to regularly review this information during staff meetings. In addition, risks associated with the department's work process and their control measures must also be communicated and understood. Annual emergency and evacuation drills are to be practiced to ensure awareness and effectiveness of emergency routes and procedures. All training, meetings and drills are documented to meet due diligence requirements.

Management will provide all tools and resources required for these programs to be effective. These include:

- appropriate emergency response plans and equipment
- training and annual retraining of department emergency responders
- time made available to allow key players to complete their duties
- established chain of command for emergency situations.

First Aid

Campus Central Response System

The Vancouver Fire and Rescue Service provides first aid coverage for all employees on the UBC Main Campus 24 hours a day. Dialing 604-822-4444 will summon the Emergency Transport Vehicle and trained first aid attendants. The first aid attendants will:

- provide treatment
- transport a worker to the hospital upon request
- record each injury in the treatment books
- complete all necessary WCB/WORKSAFE BC forms that can be used to initiate a WCB/WORKSAFE BC claim.

The 2-4444 should only be used for employees. First aid for injured students and visitors can be summoned by calling 911. Department employees are encouraged to use the 2-4444 number for first aid services; however, in any emergency situation, calling 911 is always appropriate. Workers will not be reprimanded for using 911.

Departmental Emergency Plan and Procedures

The department has established and implemented plans and procedures for situations that have been identified where emergencies could arise. These plans and procedures deal with workplace accidents/injuries, fire prevention, emergency evacuation, personal security, earthquake and bomb threats. See the Pulp and Paper Centre Fire Safety Plan and the UBC Emergency Procedures and Information Pamphlet. Depending on the nature of the emergency, response will be provided by the Vancouver Fire and Rescue Service, the local detachment of the RCMP, Campus Security and RMS.

Management has assigned fire wardens throughout the department and the DSPA coordinates the fire wardens, first aid attendants, Safety Committee and supervisors to implement and regularly review these plans and procedures.
The assigned fire wardens are:

NAME	AREA
Abbas Nikbakht	High Headroom Lab
Nici Darychuk	1st floor
Troy Mithrush	2nd floor
Francisco Fernandez	3rd floor
George Soong	Fire Safety Director

III. ACTIONS

The Director, Pulp and Paper Centre:

- Assign responsibility for the establishment of first aid and emergency services programs.
- Review accident and injury reports.
- Communicate action plans and management decisions through their respective organization.
- Monitor the department first aid system and emergency plans for compliance with WCB/WORKSAFE BC and internal requirements.
- Provide department emergency responders with the necessary tools and resources to function effectively.

Departmental Safety Program Administrator:

- Ensure all the first aid and emergency services programs are functioning as required.
- Monitor the first aid system and emergency plans for compliance with WCB/WORKSAFE BC and internal requirements.
- Review accident and injury reports.
- Coordinate the implementation and regular review of the plans and procedures.
- Communicate action plans and management decisions through their respective organization.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):
- Develop, implement and maintain emergency plans and procedures.
- Provide training on departmental emergency plans and procedures.
- Review accident/injury reports.
- Conduct annual emergency and evacuation drills in conjunction with the fire department.
- Document all training, meetings and drills.
- Communicate information and management decisions down through their respective organizations.

Local Safety Committee Members:
- Review accident and injury reports.
- Assist with the implementation and regular review of the plans and procedures.
- Communicate suggestions for improvement to the DSPA.
- Follow up on suggestions or concerns made.

First Aid Attendants:
- Provide prompt and appropriate first aid treatment.
- Keep accurate first aid records.
- Provide first aid summaries and recommendations to the DSPA and the safety committee for review.
- Follow up on recommendations.

Fire Director and Wardens:
- Maintain continual awareness for fire hazards in their areas of authority.
- Report fire hazards to the area supervisor.
- Provide recommendations to the DSPA and safety committee for review.
- Follow up on recommendations.
- Organize and conduct regular fire and evacuation drills in conjunction with the fire department.

Workers and Students:
- Know the location of emergency exits, procedures and equipment.
- Participate in emergency and evacuation drills.

IV. REFERENCES

Pulp and Paper Centre Fire Safety Plan
UBC Emergency Procedures and Information Pamphlet

V. AUTHORITIES

WCB/WORKSAFE BC Act, Sections 70-72
WCB/WORKSAFE BC Regulation 33.1 to 33.52

FIRST AID KIT SUPPLY LIST

QUANTITY	CONTENTS
12	14 cm x 19 cm wound cleansing towelettes
30	hand cleansing towelettes, individually packaged
50	sterile adhesive dressings, assorted sizes, individually packaged
6	10 cmx10 cm sterile gauze dressings, individually packaged
2	10 cm x16.5 cm sterile pressure dressings with crepe ties
2	20 cm x 25 cm sterile abdominal dressings, individually packaged
4	cotton triangular bandages, minimum length of base 1.25 m
2	safety pins
1	14 cm stainless steel bandage scissors
1	11.5 cm stainless steel sliver forceps
6	cotton tip applicators
1	2.5 cm x 4.5 cm adhesive tape
1	7.5 cm x 4.5 cm crepe roller bandage
1	pocket mask with a one-way valve (a pocket mask is only required if person is trained in its use)
6	pairs, latex or waterproof gloves
1	instruction card advising workers to report any injury to the employer for entry in the first aid records, and how a worker is to call for assistance

PERSONAL SECURITY
Element 8

I. PURPOSE

To provide all members of the University Community including faculty, staff and students with an environment safe from violence or the threat of violence.

II. PULP AND PAPER CENTRE REQUIREMENTS

The University is committed to take appropriate action(s) whenever possible to eliminate or minimize the risk or threat of violence to faculty, staff, students and visitors. Where the risk or threat of violence exists, the WCB/WORKSAFE BC requires the University/Departments to develop a program for the prevention of workplace violence.

To meet this requirement, the Pulp and Paper Centre will take the following steps:

- Risk Assessments
  Area supervisors will conduct risk assessments in areas where a risk of injury to workers from violence arising out of their employment may be present.

  When conducting these risk assessments, supervisors should consider:

  - the nature of interactions between workers and the public
  - the nature of the work environment
  - the attributes of workers/clients
  - past history of incidents of violence in your workplace and in similar operations

  Consideration could also include but is not limited to:
  - work site walkabouts with affected staff
  - employee personal security survey
  - interviews conducted with affected workers
  - reviews of crime or incident reports

  The Departmental Safety Program Administrator and safety committee members should review risk assessments to ensure that they were properly conducted. The Director and senior management will be responsible for the consideration and implementation of recommendations.

- Policies and Procedures
  Policies and procedures have been developed to address threats to personal security. These include UBC's *Discrimination and Harassment Policy #3* and *Response to Threatening Behaviour Policy #14*. Also, the *Workplace Conduct and Violence Prevention* resource guide is available from Campus Security to assist with development of a *Preventing Violence in the Workplace Program.*

Instruction of Workers

Supervisors are required to inform workers of the nature and extent of the risk of violence that they may be exposed to. Supervisors are also required to provide appropriate training to enable workers to recognize the risk, to take preventative measures and to report incidents. This information will be communicated during orientation and on-the-job training.

Workers who are faced with the imminent threat of violence should call "911" and then Campus Security at (2-2222) when it is safe to do so. This could include such situations as personal threats of violence, threatening letters and/or bomb threats.

- Response to Incidents

  Workers are required to report all incidents of violence to the area supervisor. The area supervisor will then:
  - ensure that injured workers are attended to and that they are advised to consult a physician if needed. In addition, supervisor should advise workers that counselling is also available if needed.
  - inform the Personal Security Coordinator and Campus Security of the situation
  - investigate the situation
  - take steps, if able, to prevent or minimize repeat occurrences; otherwise, report the situation to senior management for correction.

III. ACTIONS

The Director, Pulp and Paper Centre:
- Establish and maintain a personal security and public safety policy.
- Ensure that supervisors and managers are trained and knowledgeable of their responsibilities in preventing or minimizing safety and security risks.

Designated Safety Program Administrator:
- Develop procedures for reporting and responding to personal security incidents.
- Monitor the violence in the workplace prevention program for compliance with WCB/WORKSAFE BC and internal requirements.
- Communicate concerns to Administrative Heads.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):
- Develop procedures for reporting and responding to personal security incidents.
- Ensure that employees are instructed and trained in identifying and dealing with situations where the risk of violence is possible.
- Fulfill responsibilities as outlined in the personal security and public safety policy.
- Identify potential risks related to personal security and violence in the workplace.

Local Safety Committee Members:
- Promote a work environment free from violence.
- Review and monitor the workplace violence prevention program.
- Recommend actions to improve the effectiveness of the program.

Workers and Students:
- Observe the established WCB/WORKSAFE BC and internal policies and procedures on workplace violence prevention.
- Take responsibility in developing your own personal plan for dealing with potentially violent or threatening behaviour.
- Report any real or potential risks to personal security and public safety to the supervisor.

IV. AUTHORITIES

WCB/WORKSAFE BC Regulation, part 4.27- 4.31
UBC Policy #7 Safety, Policy #14 Response to Threatening Behaviour, and UBC's *Discrimination and Harassment Policy #3*

I. RETURN TO WORK

The Return to Work (RTW) Program is a collaborative process involving departments, unions, staff and faculty members at UBC. The program provides a planned approach to returning or remaining at work following an injury or illness, whether occupational or non-occupational. A personalized RTW plan is developed by a staff RTW Coordinator in consultation with the staff or faculty member, their physician and/or other health service providers, their bargaining agent and their department.

Purpose of the Return to Work Program

The purpose of the Return to Work Program is to facilitate the safe and earliest possible return to work from absence due to injury, illness or a medical condition. The program is designed to meet the requirements of *British Columbia's Human Rights Code (1996)*.

An employee's return to work may involve temporary or permanent modifications or adjustments in job duties or workplace arrangements in order to accommodate a disability of an individual staff or faculty member.

The RTW Program respects the individual employee's dignity, privacy of personal information and confidentiality of personal health information. Data is collected for the purpose of a safe return to work plan for the employee and his/her department in compliance with the *Freedom of Information and Protection of Privacy Act (1996)* and the *Personal Information Protection Act (2004)*. Further, outside agencies, such as WorkSafeBC or Sun Life, do not share their information with our program.

Who can access the Return to Work Program?

- Staff or faculty members may self refer to the RTW Program
- With the knowledge of the staff or faculty member, departments may refer employees to the RTW Program
- With the knowledge of the staff or faculty member, bargaining unit members may refer to the RTW Program

Roles and Responsibilities in the Return to Work Process

Some or all of the following parties may be involved in return to work planning in the following capacity:

- UBC – Complies with the Human Rights Code and all other relevant legislation including the Freedom of Information and Protection of Privacy Act. Compliance includes the duty to accommodate to the point of undue hardship for employees who meet the definition of disability as provided for in human rights law.
- Departments/Administrative Units – Identifies and provides reasonable, meaningful and productive job adaptations or accommodations that assist the return to work process. Ensures that employees returning to work follow safe work practices.
- Unions/Associations – Advocates on behalf of employees returning to work and ensures collective agreements are not compromised except as required by human rights legislation.
- RTW Coordinator (Health Promotion Programs) – Acts as a point of contact for all participants in the process and advocates for appropriate and successful return to work for each employee. Responsible for ensuring privacy and security of medical information.

- The Employee – Provides objective medical documentation of limitations and abilities to the Health Promotion Office. Participates in treatment as prescribed by his or her medical team. Communicates regularly with his/her supervisor and the Return to Work Coordinator.

Return to Work Process
For accepted referrals, the RTW Process begins once the staff/faculty member signs an informed consent. Once the consent is signed, a Return to Work Coordinator is assigned to the file.

The Return to Work Process generally proceeds in the following manner, however, the process is flexible depending on individual case needs:

- Program description, interview and consent
- Collection of medical documentation for the purpose of RTW
- Communication on a need to know basis with stakeholders
- Exploration and delineation of options for accommodation
- RTW plan implementation
- Follow up and monitoring

II. REFERENCES

UBC Return to Work Program document

III. AUTHORITIES

UBC Return to Work Program

RECORDS AND STATISTICS
Element 10

I. PURPOSE

Records and statistics provide a history of the activities of, and improvements to, the Occupational Safety and Health Program. They provide evidence that steps were taken to control or eliminate specific hazards. Proper documentation is one step in demonstrating the due diligence standard of care.

II. PULP AND PAPER CENTRE REQUIREMENTS

To help verify and track the Occupational Safety and Health Program, the types of records that the Pulp and Paper Centre maintains are:

- first aid records
- WCB/WORKSAFE BC inspection reports
- incident / accident reports
- accident investigation reports
- formal inspection and hazard reports
- local safety committee minutes
- training and orientation records

Department records are then used in developing statistics to identify:

- types of injuries
- total claims loss for each injury
- total time loss for each injury

Trend analysis is produced from all data accumulated under the OSH program to identify patterns, which may lead to the identification of systematic problems not perceived when looking at isolated incidents.

Records and statistics are reviewed regularly at Safety Committee meetings. This process is crucial to identifying:

- trends and hazards not previously identified
- outdated or ineffective control measures.

III. UNIVERSITY REPORTS

All accidents and WCB/WORKSAFE BC claims must be reported to Health Safety and Environment on a standard accident report and investigation form, within 24 hours. From this information, and data from the WCB/WORKSAFE BC, the Risk Management Services Department forwards relevant information to the WCB/WORKSAFE BC and compiles a monthly report that lists the number of accidents and classifies them by cause, injury, job classification and department. A brief narrative description of each accident is also produced and past year and year to date summaries are provided which are compared with previous year's data. The associated WCB/WORKSAFE BC costs of medical, wage loss, and pension amounts are also reported.

This report is circulated to the University Health and Safety Committee, VP Admin & Finance, and AVP Human Resources. The report is published on: www.hse.ubc.ca

IV. ACTIONS

The Director, Pulp and Paper Centre

- Ensure that records and statistics are maintained in accordance with WCB/WORKSAFE BC and internal requirements.
- Provide all employees with the tools and resources to ensure proper records are maintained.

Departmental Safety Program Administrator:

- Reviews safety program records.
- Meets with the supervisor to discuss and review report items and incident trends.
- Communicate and consider concerns brought forth after records and statistics are reviewed.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):

- Review Safety and Health Program records and statistics regularly.
- Communicate information and decisions through their respective organizations.
- Take corrective action once hazardous trends are identified.

Local Safety Committee members:

- Review all safety-related reports, records and statistics.
- Make recommendations to the DSPA and management.

V. REFERENCES

Due Diligence, page 1x
Local Safety Committee, page 2-1
Orientation, Training and Supervision of Workers, page 3-1
Hazard Assessments and Work Site Inspections, page 4-1
Accident Investigations, page 5-1

WCB/WORKSAFE BC Accident and Cost Report

VI. AUTHORITIES

WCB/WORKSAFE BC Regulation 3.3(f)

PROGRAM REVIEW
Element 11

I. PURPOSE

A system for evaluating the operation of the safety and health program must be initiated. The purpose of a program review is to determine and implement changes needed to improve worker safety and health protection. The program review assesses the effectiveness of each element.

II. PULP AND PAPER CENTRE REQUIREMENTS

The Pulp and Paper Centre is required to review its Health and Safety Program on an annual basis. The purposes of these reviews are to:

- inform the strengths of the Department's Occupational Safety and Health Program
- identify where the Safety Program is not in compliance with the WCB/WORKSAFE BC Regulation
- identify where the Safety Program could be further improved so as to achieve higher levels of health, safety as well as compliance
- assist the Department in reducing accidents and claims costs.

The Departmental Safety Program Administrator and members of the Safety Committee are responsible for conducting these reviews in accordance with established program review procedures. All of the elements stated in the safety program manual will be reviewed. The process will consider the potential for future injury or loss and will be a useful indicator of the department's current safety effort.

A written report will be presented to the Director upon completion of the review. Management will then authorize and implement measures to improve the department's Safety Program. The report will be posted and made available to all employees.

Management will take action on the report's recommendations by:

- developing an action plan
- prioritizing recommendations
- assigning accountability
- conducting a follow up.

All program review activities must be documented to meet due diligence requirements.

III. ACTIONS

The Director, Pulp and Paper Centre:
- Ensure that reviews are conducted as required.
- Review safety program review reports.
- Communicate action plans and management decisions through their respective organization.
- Monitor the review process for compliance with WCB/WORKSAFE BC and internal requirements.
- Provide the safety committee with the necessary tools and resources to function effectively.

Departmental Safety Program Administrator:
- Ensure that Safety Program Reviews are conducted as required.
- Monitor the review process for compliance with WCB/WORKSAFE BC and internal requirements.
- Assist in the organization of the review process.
- Review Safety Program Review Reports.
- Communicate recommendations to management.
- Communicate action plans and management decisions through their respective organization.

Supervisors (Faculty, Managers, Principle Investigators, Technicians, Supervisors, etc.):
- Review Safety Program Review Reports.
- Communicate recommendations to the DSPA.
- Inform employees of the result of Safety Program Reviews.
- Communicate information and management decisions through their respective organizations.
- Implement corrective action plans.

Local Safety Committee Members:
- Participate in Safety Program Review.
- Follow established guidelines for reviewing the safety program.
- Develop Safety Program Review Reports.
- Communicate committee recommendations to the DSPA and senior management.
- Follow up on suggestions or concerns made.

Workers:
- Cooperate with the Safety Committee in the review process.

IV. REFERENCE

WCB/WORKSAFE BC Occupational Health and Safety Program Review Reference Guide and Workbook

Procedures
The number and variety of possibly hazardous materials at UBC are large. For this reason, the procedures under this policy are meant to provide guidance via illustrations and example to individuals at UBC about such areas as chemical, biological, human and animal materials. For radioisotopes, please see Policy #11. For pesticides, please see Policy #12.

Chemical Materials
The Chemical Safety Officer develops generic procedures for handling chemicals, which are distributed to all labs. For chemicals unique to a particular laboratory, the principal investigator must develop written procedures, to be vetted by the Chemical Safety Officier. Each department or unit using chemical materials must develop or adopt procedures that include:

- Acquiring only minimum quantities
- An annual inventory of materials
- Appropriate labeling consistent with WHMIS requirements
- Compliance with University (or host institution) procedures for disposal
- Training of faculty, staff and students
- Safe and secure storage
- Inspection of time-sensitive materials
- Removing out-of-date materials from inventory
- Proper use of personal protective equipment, emergency spill and decontamination procedures

Human, Animal and Biological Materials
The Biological safety Officer develops and issues written procedures for materials used in more than one laboratory. For materials unique to a particular laboratory, the principal investigator must develop written procedures, to be vetted by the Biosafety Officer.

Each department or unit using these materials must develop procedures that include:
- Acquiring only minimum quantites.
- Appropriate labeling and an annual inventory of materials.
- Proper use of personal protective equipment, emergency, spill and decontamination procedures.
- Safe and secure storage.
- Training of faculty, staff and students.
- Compliance with University (or host institution) procedures for disposal.

Resources
Assistance and advice concerning these matters can be obtained from various sources, including:
- Local Safety Committees
- RMS Safety Manager (604-822-5909)
- Chemical Safety Committee (604-822-5909)
- Biological Safety (604-822-7596)

This summary is an excerpt for UBC's Policy #9 Hazardous Materials Management. A complete copy of Risk Management Services Policy #9 is available on-line through: http://www.universitycounsel.ubc.ca/policies/policies.html.

The role and responsibility of the Risk Management Services Department (RMS) is to provide programs, services, assistance and guidance to the university community on all aspects of health, safety and environmental matters. The Department also works with standing University committees which make recommendations on health and safety issues HS&E promotes the participation of all faculty, staff and students in safety committees and in addressing health and safety issues of concern. Several training courses are held throughout the year to assist employees in developing departmental programs. For information on any of the courses, call 604-822-2029.

Asbestos Management
The Asbestos Management Program is managed on behalf of UBC by Land and Building Services and its mandate is to control the hazards of exposure to airborne asbestos fibres by the identification and elimination, or the containment of asbestos-containing materials. UBC has many buildings constructed during decades when asbestos was a common addition to building materials. For example, of the University's one million plus square metres of floor area, approximately 84% contains some form of asbestos-containing material (ACM).

Services include:

- Inspection, inventory and documentation of ACM in UBC facilities
- Providing support for Plant Operations and Campus and Community Planning personnel during renovation and maintenance projects
- Implementation and maintenance of an on-site information system on asbestos materials through the placement of hazard labels in every room on campus

Contact the Asbestos Management Group at Land and Building Services for any questions or concerns at (604) 822-8772.

Biosafety Program
The Biosafety Program evaluates and oversees the potential risks in research projects involving biohazardous materials through training, facility and equipment certification and research protocol review. All research projects must be reviewed and approved by the Biosafety Office and the University Biosafety Committee prior to release of funding. The Biosafety Office also acts as a resource on issues of biosafety, including laboratory design and equipment selection.

Services include:

- Laboratory Biological Safety Course
- Mandatory annual biological safety cabinets certification
- Laminar flow hood tests and certification
- Biosafety seminars and presentations

Contact Information:
RMS Advisor (Biosafety)
(604) 822-9527

Chemical safety and Hygiene
The Chemical Safety Program promotes the recognition, evaluation and control of workplace environmental health hazards such as chemical or noise exposures that may cause illness, impaired health or significant discomfort to UBC faculty, staff and students. The Program also promotes the safe handling and storage of laboratory, industrial and agricultural chemicals at the University. Information, advice and guidance on regulations and recognized safe handling procedures and practices for hazardous materials are provided to the University community.

Services include:

- Laboratory chemical safety training
- Laboratory inspection services
- Laboratory fume hood safety testing
- Workplace Hazardous Materials Information System (WHMIS) training
- Material Safety Data Sheets (MSDS)
- Transportation of Dangerous Goods (TDG) training and consultation
- Emergency response to accidents involving hazardous materials
- Risk assessment and work procedures development
- Assistance with indoor air quality issues, including referrals to third party service providers
- Respiratory protection training and consultation

Contact Information:
RMS Advisor (Environment)
(604) 822-9280

Diving Safety
The Diving Safety Program manages the diving certification of faculty, staff and students engaged in research projects requiring scientific diving.

UBC is located on the shoreline of the nutrient-rich waters of the Pacific Northwest, waters that are blessed with a broad diversity of marine plants and animals. It is for this reason that the area is ranked among the top-five best SCUBA (Self-Contained Underwater Breathing Apparatus) diving areas in the world. The close proximity to these abundant waters offers students and faculty virtually endless opportunities for marine related research and study. Skin and SCUBA diving extend these possibilities even further by allowing for the first-hand study of previously "inaccessible" areas and organisms.

Fields of study currently using SCUBA diving as a research tool include:

- Marine Biology
- Zoology
- Botany
- Oceanography
- Chemistry

- Biology
- Coastal Processes

While the use of diving as a tool for research can add considerable validity to research findings or theories, the gathering of data in marine and aquatic environments poses specific and significant risks that must be closely managed. The UBC Diving Safety Program has been established to manage those risks.

Anyone planning to use SCUBA diving as a tool for research or study under University auspices, must first be registered as a certified Scientific Diver with the Diving Safety Office. This status must be kept current as long as research diving activities continue. Certification as a Scientific Diver is a relatively simple procedure that is designed to encourage and facilitate the safe and efficient use of diving in scientific research.

Contact Information:
Diving Safety Officer
diving@riskmanagement.ubc.ca
(604) 822-0864

Emergency Planning

The Emergency Planning Office at UBC is responsible for providing plans, processes and training to lay the foundation for a coordinated and effective response to emergency events on campus. Lines of authority, critical responsibilities, key responders and essential resources have been identified in the UBC Disaster Response Plan, which is tested annually through campus-wide emergency scenarios. This is supplemented with assistance in the development of departmental Fire and Safety Plans, Business Continuity Plans and other operational resiliency measures. Emergency Planning also coordinates ongoing training programs for local Emergency Response Teams (ERTs), departmental Floor Wardens, individual Emergency Preparedness, and other related emergency response topics.

In the event of a large-scale emergency occurring on campus, the University will activate the UBC Disaster Response Plan and its Emergency Operations Centre to coordinate campus and community response as well as recovery activities.

Business continuity planning is a new and growing activity at UBC. In cooperation with many campus partners, RMS is developing tools and processes to increase the operational resiliency for teaching, research and support activities, and is working with academic, administrative and support departments to develop recovery plans that will enable the University to recover quickly after major disaster events.

The Emergency Planning Steering Committee (EPSC), comprised of members from staff and faculty, actively provides guidance and advice to the Emergency Planning Office, and undertakes activities to further the effectiveness of emergency management at UBC.

A summary of RMS' Emergency Planning responsibilities is listed:

- Development and continuous improvement of the UBC Disaster Response Plan
- Development and continuous improvement of the effectiveness of the UBC Emergency Operations Centre (EOC)
- Development of Emergency Response Teams (ERTs)
- Assistance in developing departmental Fire and Safety Plans

- Development of an Emergency Social Services Program for the UBC community
- Development of departmental and campus-wide Business Continuity Plans and other operational resiliency measures
- Initial and refresher training for new/ongoing EOC members
- Presentation and coordination of Fire Floor Warden Training
- Coordination of other emergency preparedness-related training for departments and other groups
- Design, administration and coordination of the annual campus-wide EOC exercise
- Development and coordination of scenarios to practice ERT skills and to exercise departmental emergency plans

If you require information on how to prepare for an emergency, please contact the Emergency Planning Coordinator at (604) 822-1237.

First Aid

First Aid at UBC is a free service for all employees that is available 24-hours a day. The service is contracted through the Vancouver Fire & Rescue Service. For first aid treatment phone 604-822-4444 (or 2-4444 from a University telephone).

First Aid at UBC is in compliance with Workers' Compensation Board Occupational Health & Safety Regulations.

The Department of Health, Safety & Environment coordinates Occupational First Aid Level 1 Training. The course is a one-day training conducted at the University Fire Station-Hall 10. For further course dates and registration information see First Aid Courses.

Contact Information:

Administrative Clerk
(604) 822-2029

HAZARDOUS materials Management

The University is committed to research activities that are in harmony with our commitment to a sustainable society. To that end, UBC is taking progressive and innovative steps to reduce the environmental footprint of our research programs. Further, by following the policies and procedures found on this website, the University will ensure compliance with regulatory requirements, UBC Policies and best management practices.

HSE facilitates this process by coordinating the disposal of hazardous waste materials through the Environmental Services Facility located at South Campus. Here, laboratory wastes and hazardous materials generated by the University through research, academic and operational activities are consolidated, recycled, re-used, neutralized or disposed.

Waste reduction at UBC is achieved through chemical conservation programs, consisting of:

- Chemical Exchange Program

- Silver Recovery Program
- Solvent Recovery Program
- Pollution Prevention Initiatives

For more information on hazardous waste disposal or chemical conservation programs please contact:
RMS Advisor (Environment)
env-program@riskmanagement.ubc.ca
(604) 822-9280

WCB CLAIMS ASSISTANCE

Any event involving injury to a person or damage to property, or with the potential to do so, must be reported to the Department of Health, Safety and Environment within 24 hours of occurrence. The UBC Faculty & Staff Incident/Accident Report must be completed for every incident or accident, even if no injuries were sustained.

For serious accidents which result in death or a critical condition with a serious risk of death, involve a diving accident, involve an explosion, major structural failure or collapse of a building, scaffolding, hoist, tower temporary construction support system, or excavation, or involve the release of a toxic or hazardous substance call 911. In addition, call the Department of Risk Management Services at (604) 822-2029 immediately and seal the area.

In the event of an incident, immediately tend to any injured parties, taking care to minimize disturbing the scene beyond what is required to provide assistance or to prevent harm to other individuals or the environment. Following a serious incident, investigators may attend the scene to determine causes, so it is important to maintain the site so that a thorough investigation may be completed.

In all cases, the employee should complete the WorkSafeBC Form 6A - Worker's Report of Injury or Occupational Disease to Employer.

The WorkSafeBC website can provide additional information on the claims process and will also have the most up to date versions of the *Act.*

HS&E TRAINING COURSES

Introduction to Laboratory Safety
This course, which covers safety in laboratories, is suitable for undergraduate students working or studying in laboratories where hazardous materials are in use. All summer students, who may potentially be exposed to hazardous materials, are required to take this safety course. This course fulfills the safety requirement for summer work students, co-op students or work study students who are working under direct supervision. Successful students will be knowledgeable about the Workplace Hazardous Material Information System (WHMIS), biohazards, hazardous chemicals and radioactive materials. Completion of this course does NOT certify individuals to work unsupervised with biohazards, radioactive materials or hazardous chemicals. To work with these hazards independently, all persons must complete the appropriate hazard specific courses.

Laboratory Biological Safety
The University Biosafety Committee requires that the successful completion of the "Laboratory Biological Safety Course" be a mandatory requirement for all new staff and new projects involved with Biohazard level II or greater. This applies to all Principle Investigators/Course Directors, faculty, staff and students conducting work with these materials.

Laboratory Chemical Safety
The two lectures will cover: chemical hazards, WHMIS, safe handling, storage, hazard recognition and control, waste management and emergency response. In the practical session, the participant will learn about the Vancouver Fire Service's HAZMAT team, perform a spill clean up, learn decontamination procedures and how to safely extinguish a fire.
This course is for laboratory supervisory personnel and is also suitable for students working or studying in laboratories where chemicals are in use. UBC's Chemical Safety Advisory Committee requires that: " ***All faculty, staff and graduate students, who handle hazardous materials, are required to take a chemical safety course***," This course fulfills this requirement.
Attendance at both lectures, a practical session, payment of the aforementioned fee and successful completion of the exam is required for certification.

LASER Safety and Program Development
The UBC Radiation Safety Office (RSO) will be presenting a short course entitled: Developing A Laboratory LASER Safety Program. This two hour course is designed to enable researchers to design and maintain an effective LASER Safety Program specific to the LASER hazards within their workplace. The course topics include a brief review of LASER energy generation, the organs at risk and the potential consequences of accidental exposure. The various LASER hazard classifications will be reviewed and hazards incidental to LASER generation will be addressed. The elements of an effective LASER safety program will be introduced and participants will be encouraged to begin the steps of designing a safety program specific to the needs of their workplace. Draft programs will be reviewed by the RSO and will become the operational standard for their worksite. Participants are encouraged to bring to the class any documentation relating to the LASER equipment, LASER location, LASER enclosures, LASER interlocks, etc in their workplace in order to lay the groundwork for their programs.

Office Ergonomics Representative Training
This 4-hour course is intended for designated individuals who will be the representative for office ergonomics in their department. Training and practice will be provided on proper computer workstation set-up. Upon completion of the course, participants will be able to assist colleagues to prevent/minimize risk factors potentially leading to injury with proper computer workstation set-ups.

Occupational First Aid, Level I
The Occupational First Aid Level 1 Course is a one-day training session which teaches the basics of first aid response in an emergency situation. Certification is from the Workers Compensation Board and Saint John Ambulance, and is valid for two (2) years. The course also includes CPR Level A certification, which is valid for one (1) year. The cour se is held at the University Fire Station-Hall No. 10 (2992 Wesbrook Mall) from 8:30 am - 5:00 pm.

Radionuclide Safety and Methodology
This course take place over THREE half-days. The course meets the basic training requirements of the Canadian Nuclear Safety Commission and consists of six hours (2days x 3hrs) of lecture over two days and a three-hour laboratory practical session on day 3 that includes a final exam. The fundamentals of radiation physics are briefly covered, with the emphasis of the course placed on practical handling techniques, health hazards, record keeping, legal requirements, purchasing of isotopes, spill management and waste disposal. FAILURE TO ATTEND BOTH LECTURES AND THE PRACTICAL SESSION PRECLUDES CERTIFICATION

Safety Committee Training
TWO DAY COURSE Intended for safety committee members and supervisors. Topics include accident prevention, effective commi ttee operations, safety inspections, accident investigation, safety training and the role of the WorkSafeBC. Meets WorkSafeBC Safety Committee Training Requirements.

GLOSSARY
Appendix B

Accident: an accident is an unplanned chain of events that causes the downgrading of a business operation and results in injury to employees or damage to equipment.

Administrative Head of Unit: a Director of a service unit, a Head of an academic department, a Director of a center, institute or school, a Principle of a college, a Dean, an Associate Vice President, the Registrar, the University Librarian, a Vice President or the President.

Authorized: to be designated or assigned by a manager or supervisor and trained to perform a specific type of duty or duties, to use specific equipment or vehicles and/or to be present in a given location at specified times.

Contractor: any person who works on University premises or projects who receives no medical, etc. benefits and is not considered an employee (full-time, part time or temporary) of the University.

Controls: emergency measures and techniques designed to eliminate or to reduce to acceptable levels, exposures to harmful agents in the workplace. These include engineering controls, monitoring, personal protection, administrative controls and work practices.

Controlled Product: A product, material or substance specified by regulations of the "Hazardous Products Act of Canada" as products, materials or substances included in any of the classes listed in Schedule II of the Act.

Critical Job: Jobs with past "loss" experiences, potential for a substantial loss, probability of a loss occurring, or new or unknown procedures.

Departmental Safety Program Administrator (DSPA): the Department Head or a faculty member or M&P staff person appointed by the Head. The DSPA is responsible for managing the safety program of the department. Also see Section 2, Roles and Responsibilities.

Emergency Number: a telephone number to be used for immediate access to help and assistance when an accident or serious problem occurs.

Emergency Response Plan: a plan of action in case of an emergency.

Employee: any individual who is considered a full-time, part-time or temporary employee of the University. This includes all bargaining unit, management and senior management personnel. Also see Manager/Supervisor.

Ergonomics: study of the problems of people in adjusting to their environment; science that seeks to adapt work or working conditions to suit the worker. The aim of the discipline is the evaluation and design of facilities, environments, jobs, training methods and equipment to match the capabilities of users and workers, and to reduce the potential for fatigue, error or unsafe acts.

First Aid: emergency care of a person who is injured or ill to prevent death or further injury, to relieve pain and counteract shock until medical aid can be obtained.

First Aid Attendant: certified employee appointed and trained by the University/Department to administer first aid.

Formal Inspection: scheduled, comprehensive inspection of the overall workplace, usually performed at least once per month by properly trained operating personnel. Also see Informal Inspection and Job Observation.

Hazard: dangerous object, event, behaviour or condition, which can interrupt or interfere with the expected orderly progress of an activity.

Hazard Analysis: See Job Safety Analysis.

Hazard Reporting: reporting of a dangerous condition, potential or inherent, which can bring about an interruption or interference with the expected orderly progress of an activity.

Hazardous Material/Product: substance or material capable of posing an unreasonable risk to health, safety and/or property if not handled, transported or stored properly.

Hazardous Waste: solid or liquid waste that may cause or significantly contribute to serious illness or death, or that poses a substantial threat to human health or environment when the waste is improperly managed. Characteristics of hazardous waste are: ignitibility, gaseousness, corrosiveness, reactivity (explosiveness) or toxicity.

Health Monitoring: a system for providing surveillance of the health of employees exposed to hazardous substances.

Housekeeping: cleanliness, neatness and orderliness of an area with the designation of a proper place for everything and everything in its proper place; good housekeeping practices often preclude the occurrence of accidents in homes and workplaces.

Incident: an unforeseen event or occurrence, which does not result in an injury or property loss but has the potential.

Industrial Disease: a disease arising out of, and in the course of employment, resulting from exposure to, the absorption of or intoxication from harmful chemical, biological or physical agents to which the general public would not normally be exposed.

Industrial Health and Safety Regulation: Minimum health and safety requirements, prepared by the Workers' Compensation Board under the authority of the Workers' compensation Act. This regulation applies to all persons working in or contributing to the final production of those industries coming within the scope of the Workers' Compensation Act of British Columbia.

Informal Inspection: an unscheduled, unplanned, walk through inspection of the workplace. Also see Formal Inspection and Job Observation.

Inspection: (a) deliberate, systematic scrutiny or examination of an activity or item; (b) thorough, close, critical examination, checking or testing against established standards. Also see Formal and Informal inspection.

Investigation: detailed systematic search to uncover facts and determine the truth of the factors (who, what, when, where, why and how) of accidents.

Job: an individual task or activity that an employee does within their occupation. The job is not the occupation itself.

Job Observation: observing an employee to determine if the employee is performing the job free from safety and health hazards without risk or damage to equipment, materials or other workers. Also see Formal Inspection, Informal Inspection and Job Safety Analysis.

Job Procedures: a step-by-step description that describes how to perform a job or task safely.

Job Safety Analysis: the break down into its component parts of any method or procedure to determine the hazards connected therewith and the requirements or qualifications of those who are to perform it.

A method for studying a job to (1) identify hazards or potential accidents associated with each step or task and (2) develop solutions that will eliminate, nullify or prevent such hazards or accidents.

Local Safety and Health Committee: safety committee at the local/departmental workplace level. Also see Safety and Health Committees.

Manager/Supervisor: any individual held responsible for the behaviour and production of a group of employees.

Material Handling: lifting, transporting and depositing material by human means using a variety of hand or hand-operated accessories such as hooks, bars, jacks, hand trucks, dollies, wheel barrows or other mechanical means.

Material Safety Data Sheets (MSDS): data sheet that contains detailed information related to the possible safety and health hazards of a product. The MSDS are available from the manufacturer for any chemical or mixture of chemicals used in industry (all controlled products).

Monitor: to observe, listen in on, keep track of or exercise surveillance over a process or activity, e.g., to monitor radio signals, the quality of a product in an assembly live, the progress of a chemical reaction or the manufacturing steps in a production process.

MSDS: See material safety data sheet.

Occupational Environment Regulations: the government regulations of BC that govern workplace environment, including: lighting, heating, atmospheric conditions, office layout, etc.

Occupational Injury: an injury arising out of, and in the course of employment, resulting from the action of traumatizing physical or chemical agents in the workplace.

On-the-Job-Training: job-specific education and training of employees so that they may perform the work free of safety and health hazards.

Orientation: the act of making the employee aware of the employee's job functions, responsibilities and how to safely perform the work.

Personal Protective Equipment: device or item of apparel worn to protect a worker, vehicle driver or passenger, or participant in a game or sports activity, ex. Helmet, goggles, safety belt, apron, shoulder pads, safety footwear, respirator etc.

Personal Security Emergency: exists when a reasonable person believes that there is an imminent risk to personal safety and that there is a need for immediate intervention.

Program Review: See Safety and Health Program Review.

Safety and Health Committee: committee of bargaining unit and management employees whose purpose is to promote safe workplace attitudes and practices, and to reduce or eliminate hazards and accidents.

Safety and Health Policy: written statement that expresses the philosophy, experience, commitment and belief of the Department's senior management towards workplace safety and health.

Safety and Health Program: the administrative and procedural plan for placing loss prevention and hazard control systems into operation and maintaining their effectiveness. An orderly arrangement of activities and procedures which facilitate safe performance of tasks and processes and maintains control of risk due to hazardous exposure, including human error.

Safety Meetings: communication technique to relate effective employee knowledge, attitudes and skills applied to a job.

Safety and Health Program Review: an examination or evaluation to determine adherence to the Department's safety and health program plans, goals, and results. Such a review provides for the basis for higher management judgment of safety and health program effectiveness.

Safety and Health Training: the transmission of knowledge, skills, attitudes, motivations, etc. Concerning the corporate safety and health requirements of operations, processes, environment, etc., to persons working on University premises.

Senior Management: any individual held responsible for the direction and effective performance of operations of the organization.

Statistics: branch of mathematics dealing with numerical data assembled, processed an interpreted so as to present useful information about a given subject.

Supplier Label: label provided by a supplier that complies with the requirements, discloses the information and displays the hazard symbols as described in section 13b of the Hazardous Products Act (Canada), section 17 of the Controlled Products Regulations and section 11 of the WHMIS Regulations.

Threat: a declaration of an intention to punish or hurt. This may include: bomb and personal threats.

Verification: the process of an instance of establishing the correctness by examination or demonstration, i.e., the supervisor verifies that the employee is performing the work safely.

WHMIS: Workplace Hazardous Materials Information System. This legislation describes the safety and health hazards connected with hazardous (controlled products) materials in the workplace. Also see Material Safety Data Sheets and supplier / workplace label.

Workplace Inspection: See Inspection.

Workplace Label: label that discloses a product identifier, and information for safe handling of the controlled product and that indicates that a Material Safety Data Sheet is available.

Workplace Monitoring: to detect and measure any deviation from established safety and health procedures, using observation and information collection methods.

Introduction to Laboratory Safety

Safety vs Risk

Hazards present in laboratories include toxic chemicals, electrical equipment, radioisotopes, compressed gasses, and biohazards. By identifying sources of hazards and by assessing the risks of accidents, however, even activities of high potential risk can be engaged in safely. Most hazards that are faced in the laboratory are already known and their associated risks have been defined. Techniques to avoid unnecessary exposure to these hazards have been developed and are incorporated into the safety standards, regulations, policies, and procedures which you will be expected to follow.

The best way to learn about the hazards in your workplace and how to avoid them is to work with an experienced and knowledgeable person and to actively seek relevant information and training.

Personal Protective Equipment

Goggles, face shields, ear protectors etc. are designed for your protection - Use them!!

Gloves

Gloves may be an important part of your primary protective equipment, **if they are used properly**. Gloves are to be worn when handling isotopes, hazardous chemicals or biohazards and NOT when wandering around a lab handling pens, phones or equipment. Gloves are designed to prevent contamination, not cause it.

Air Flow Equipment

In working with biohazards, personal protective equipment includes the proper use of Biosafety cabinets to contain the aerosols created by working with biohazardous materials. There are several different types of air flow cabinets and hoods used in research and diagnostic labs and it is extremely important that you are aware of the differences between simple fume hoods, laminar flow hoods, and the various types of biological safety cabinets. They are not interchangeable, although they may be visibly quite similar in appearance.

Aerosols

Aerosols are thought to be the major method of transmission of laboratory acquired infections. Sonicators, pipettors, vortex mixers, centrifuges, etc can all be major aerosol producers. Even if you are not handling biohazards, if someone else in your work area has created an uncontained aerosol or contaminated commonly used equipment and lab furnishings, you are at risk.

Preplanning and Clean-up

Preplanning your experiments and the proper organization of your work area can eliminate a lot of potential problems. Clean-up and decontamination must be a routine part of experimental design for all lab personnel.

The careful routing and identification of contaminated and waste materials as they are generated can make clean-up safer for lab personnel as well for the other people who must deal with your glassware, discards, and wastes once they have left your lab. Make sure that you understand what happens to any biohazardous, radioactive, or other dangerous material that leaves your lab. Make sure that it is placed in an appropriate container, that it is appropriately labelled, and that it is placed in the appropriate location for pick-up. You and your fellow lab workers may know what it is, but unless you package and identify it properly before it leaves your lab, it may not be handled properly after.

Don't depend on all the fancy equipment you see in your lab to protect you. Thousands of dollars worth of biosafety cabinets,fume hoods, disinfectants, and the barrier protection offered by gloves, shielding, and labcoats can be easily defeated by sloppy work habits and a reluctance to recognize or deal with a problem. Your working habits and personal hygiene are your most important protection against an accident or a laboratory acquired infection. They also constitute your major risk of becoming a statistic. You must recognize and understand the risks that exist in your work place and be able to logically assess which risks are acceptable and which are not. If you don't have the equipment you require to do an experiment safely, redesign the experiment or don't do it until you are satisfied that you can do it safely.

Safety Standards, Policies, and Guidelines are designed to reduce to an acceptable level the risks inherent in the use of dangerous materials. They are for the protection of you, your fellow workers, and your community. Know which apply to you.

Rules for Personal Laboratory Safety

1. Eye protection should be worn at all times.

2. **NO** EATING, DRINKING OR SMOKING in laboratories.

3. Lab coats must he worn when handling c**orrosive, toxic, or flammable materials** . Gloves should be worn when necessary.

4. Never work alone.

5. Do not mouth pipet.

6. If you see a colleague doing something dangerous, point it out to him or her.

7. Know where safety equipment (eyewash, shower, and extinguishers) is located and how to use it.

8. Know how to clean up spills of the chemicals that you use.

9. Wash your hands after handling chemicals and before leaving the lab.

10. Open shoes are not to be worn.

11. Bare legs are not acceptable when handling hot, cold or sharp materials as well as toxic or corrosive chemicals.

WORK PRACTICES FOR LABORATORY FUME HOODS

1. Conduct all operations which may generate air-born contaminants inside a hood;

2. Always wear appropriate eye protection and a lab coat when working around a fume hood.

3. Do not raise the sash higher than the labelled height. This will reduce hood efficiency.

4. Keep apparatus at least 15 cm from the face of the hood.

5. If the hood is used for semi-permanent experiments, post the name of the person in charge, phone number, experiment title, and possible hazards.

6. Do not to store chemicals inside the hood. Hazardous chemicals should be stored in an approved safety cabinet.

7. Keep your head outside the face of the hood.

8. Avoid cross drafts at the face of the hood. Minimize foot traffic past the hood and position windows and supply air diffusers to direct airflow away from the hood.

9. Do not place electrical receptacles or other ignition sources inside the hood when flammable liquids or gases are present. No permanent electrical receptacles are permitted in the hood.

10. Avoid blocking the rear ventilation slot. Material stored at the back of the hood should be stored on an elevated shelf so that the slot airflow is not impeded.

11. Leave the sash lowered when the hood is unattended.

12. Keep the bypass grille clean.

CHEMICALS AND CHEMICAL STORAGE

Chemical Storage

- Store in central, properly ventilated area; this includes forced ventilation from floor to ceiling with exhaust above roof level.
- Know the location of the master control shut-off valves for gas, water and electricity.
- A communication system to the main office or emergency system is recommended.
- Shelving should be accessible with chemicals at eye level or lower; no high shelf storage.
- Avoid floor chemical storage.
- Firmly secure shelf assemblies to walls. Avoid island shelf assemblies.
- Provide anti-roll lips on all shelves.
- Shelving assemblies should be of wood construction (except for storage of oxidizers).
- Avoid metal, adjustable shelf supports and clips; use fixed, wooden supports.
- For emergencies have:
  - Fire extinguishers, of the approved type positioned near an escape route.
  - Spill control and clean-up materials.
  - Approved eye/face wash and shower.

Laboratory Chemical Storage

- Laboratories are not storerooms. This applies to the storage of chemicals, solvents and equipment. For success in chemical storage, use these criteria.

1. Small amounts, not stockpiled.
   Ordering the larger 1 Kg size because it is cheaper than the 100g size results in
   - More valuable space being taken up
   - Presents a greater potential hazard
   - May lead to a future disposal problem

2. Secure
   - Do not overcrowd shelves
   - Do not store too high; provide a proper kickstool or ladder where necessary
   - Chain compressed gas cylinders.
   - Store lecture bottles upright and chain or secure in a proper holder
   - Store solvents in a proper flammable liquids cabinet, and keep door closed.
   - Use appropriate containers for solvents and waste.
   - Store highly toxic or controlled materials in a secure or locked cupboard.

3. Properly labeled
   - Label contents clearly
   - Labels must be intact and legible
   - WHMIS hazard labels properly used
   - Do not overwrite labels.

4. Sealed
   - Keep solvent containers closed
   - Ensure chemical containers are intact
   - Ensure container lids are intact and closed
   - Regularly vent materials capable of building pressure

5. Segregated
   - Know what is in storage; separate incompatible materials.
   - Be aware of nomenclature problems

     e.g. PHENOL is also knows as:
     carbolic acid
     hydroxy benzene
     oxybenzene
     phenic acid
     phenyl hydroxide

     The Merck Index can be a useful reference for checking equivalent names.

Methods of Storage

- Chemical storage, whether in a laboratory or central storeroom, should be under the supervision of a qualified person.
- Safety cabinets should be used for specialized groups of compatible substances.
- Separate by Compatibility
  - Refer to
    a) Material Safety Data Sheets
    b) Chemical Catalogues
    c) US School System Lab Storage Guide

1. Acids and Bases
   1. Store acids and bases separately
   2. Store acids in dedicated acid cabinet
   3. Store oxidizing acids (eg. Nitric acid) away from organic acids (eg. Acetic acid)
   4. Store hydrofluoric and perchloric acids insecondary containers manufactured from compatible materials
   5. Safety showers and eye wash facilities must be within easy access
   6. Protective equipment must be inspected regularly to insure proper working order, especially in corrosive atmospheres

2. Flammable Liquids
Flammable liquids should be stores in a dry cool well ventilated area such as a flammable liquid storage room or cabinet.

i) Laboratory storage

Flammable liquids should be stored according to the following rules which have been exerpted from the Fire Code.

- Maximum size of containers recommended for lab use is 5 litres
- Maximum volume outside flammable liquid cabinet, in the open lab is 25 litres of those materials with a flash point below 37.8 °C
- Flammable liquids should preferably be stored in metal safety cans which meet the fire code requirements
- Glass containers, of >1 liter, may be used only if purity of the material is affected by exposure to metal or it is the original container
- Waste solvent containers must be capped when not in active use; their volume is included in the 5 liter container size for laboratories and 25 L maximum volume in open lab

ii) Flammable liquid cabinets

An approved flammable liquid storage cabinet may be used when quantities of flammables exceed those previously mentioned. Unlike a regular metal type cabinet, an approved flammable liquid storage cabinet must be listed by an acceptable testing agency and approved by the local Fire Department.

Advantages of flammable liquid cabinets are:

- Better control of flammables, thus eliminating the problem of careless open storage of small containers
- Offers a safe means of storage over a short period of time
- Time-saving method of storage by locating cabinets in or adjacent to work area. This reduces the frequency of trips to the drum storage or dispensing facility.

Flammable liquids cabinets must:

- Be ULC listed and approved
- Be closed at all times, with door latches operable
- Have vents that are either plugged or vented directly to the outside
- Be either wood or metal
- Be suitably placed i.e. not located near an exit door or blocking access to an exit
- May have to be in a room which has a second exit depending on the quantity and hazards of flammable liquids in the room
- Contain no more than 500 litres maximum of flammable and combustible liquids of which no more that 250 litres may be flammable
- Be no more than one per fire compartment unless otherwise approved by the local Fire Deparment

iii) Refrigerator Storage
In the event that chemicals need to be stored in a refrigerator, certain guidelines must be followed. The materials must be securely packaged, tightly sealed and properly labelled. Ensure that materials, especially those that are highly reactive or corrosive, are inspected regularly and that lids are intact. Flammable materials when they must be kept cool, must be stored in an explosion proof refrigerator.

Refrigerators must be ULC approved for storage of flammable liquids (explosion-proof) or acceptably tested and approved. A number of refrigerators have exploded due to flammable vapours.

iv) Flammable compressed gas cylinders

- Protect against mechanical damage
- Store in a secure area
- Store with protective caps on
- Store in a dry, well-ventilated area
- Store flammable, oxidizing and poison gases separately
- If stored indoors, the room must have a 2 hour fire separation with entry from the exterior
- Natural ventilation to outside wall must exist: room must have no other purpose
- Compressed gas is heavier than air
- Only 1 cylinder is allowed in any one room and must not be located below grade
- Poisonous compressed gases shall be separated from the remainder of the building by a gas tight fire separation
- Poisonous compressed gases shall be stored in a room with and exterior entrance and not with combustible or flammable material

Oxidizing Materials

Oxidizing materials must be stored away from flammable and combustible materials as well as separate from reducing agents.

The simplest method of ensuring that this occurs is to located all oxidizing materials and store them in a separate location.

Read material safety data sheets (MSDS) to ensure that they are all compatible with each other.

Dangerously Reactive Materials

Read MSDS. Isolate from other chemicals and ensure that storage conditions are appropriate. Cool, dry well-ventilated areas are required. Additional criteria may include an oxygen free environment for water reactive materials.

Once the chemicals are sorted into the previously described grouping they can sorted into organic and inorganic classes.

Inorganic

a) Metal, hydrides
b) Halides, sulfates, sulfites, thiosulfates
c) Amides, nitrates (except ammonium nitrate), nitrates, azides, nitric acid
d) Ethers, ketones, ketenes, halogenated carbon
e) Sulfides, selenides, phosphides, carbides, nitrides
f) Chorates, perchlorates, perchloric acid, chlorites, hypochlorites, peroxides, hydrogen peroxide
g) Arsenates, cyanides, cyanates
h) Borates, chromates, manganates, permanganates
i) Acids (except nitric)
j) Sulfur, phosphorus, arsenic, phosphorus pentoxide

Organic

a) Acids, anhydrides, peracids
b) Alcohols, glycols, amines, amides, imines, phosphates, halogens, imides
c) Hydrocarbons, esters, aldehydes
d) Hydroxides, oxides, silicates, carbonates, hydrocarbons, ethylene oxide
e) Epoxy compounds, isocyanates
f) Peroxides, hydroperoxides, azides
g) Sulfides, polysulfides, sulfoxides, nitriles
h) Phenols, cresols

CHEMICAL SPILLS

Report all incidents to the Departmental Safety Program Administrator as soon as possible (604-822-2530).

The three categories of reportable incidents are:
A) Personal Injuries Involving Chemical Exposure.
B) Personal Contamination.
C) Spills > 1 litre.

A) Personal Injuries Involving Chemical Exposure:

In the event of personal injury, the treatment of the injury must take precedence over spill clean-up procedures. Minimize contamination by confining all contaminated persons to a restricted area if doing so does not add to the extent of their injuries, their suffering, or impede the speed of their recovery.

Minor injuries normally involving a small cut or break in the skin with co-incident chemical exposure should be treated as follows:

1. Begin treatment immediately at or near the scene of the accident.
2. Rinse a contaminated wound under a tap with copious quantities of water and encourage bleeding for a few minutes.
3. If the wound is on the face, take care not to contaminate the eyes, nostrils or mouth.
4. Wash the wound with mild soap and lukewarm water.
5. Apply a sterile first aid dressing.

For serious injuries requiring more than first aid treatment, advise the following steps:

1. Treat the immediately threatening condition which may require control of bleeding, CPR or washing of chemical exposed skin for 15 minutes.
2. If first aid assistance is required:
    a) Call the first aid response number at **604-822-4444** or pull the Fire Alarm if no phone is available.
    b) Advise emergency personnel of the chemical name, extent of injuries and hazards of the material.
    c) Inhalation - If the person has inhaled chemical fumes the best first aid advice which can be given over the phone is to remove the person from the site of exposure and get medical help immediately.

d) Ingestion - Dilution of the stomach contents by drinking water, (if victim is conscious) followed by immediate medical attention is the best advice that can be given over the phone in the case of ingestion. Contact the Poison Control Centre, 604-682 - 5050.

e) Skin Exposure - All skin or eye exposure (chemical burn) first aid involves dilution with water. Irrigating the burn area or eyes for 15 minutes followed by medical evaluation is the standard procedure. This must be done immediately. If it is certain that the spilled chemical will cause a burn advise dilution and cleaning of all exposed skin. Obtain medical attention.

B) Personal Decontamination Procedures:

1. External Exposure:

a) Determine the extent of the contamination.

b) Remove contaminated clothing.

c) Flush the affected areas with copious quantities of water for 15 minutes. After using the nearest emergency shower or eyewash for about 5 minutes the affected person may be taken to a tempered shower or eyewash if one is available in the building.

d) Do not use abrasives or scrub the skin as this may increase the extent of injury.

e) Inform the individuals that they must fill out an incident/accident report form and they must inform their immediate supervisor.

C) Spill Clean-up Procedures

Once the risk of injuries has been controlled, the spill may be cleaned up and the area decontaminated using the following procedure:

1) Notify other people in the vicinity of the spill and inform the supervisor. Evacuate and post the area if necessary.

2) Remove contaminated clothing and assess if any areas of the body have been contaminated. If the individual is contaminated, see Decontamination of Personnel section above.

3) Before working with any spill the following information must be obtained:

a) The name of the chemical(s) involved.

b) The approximate volume.

c) The hazards of the chemical, (review MSDS if available),.

-Flammability - Flash point and vapour pressure.

-Toxicity - inhalation hazard.

-Corrosiveness - acid, base, pH of solution.

d) Determine if the persons involved have the equipment training or understanding to safely clean up the spill. If there is any doubt, advise the person to stay out of the lab and to call the Hazardous Materials Response at 911 for cleanup assistance. Post "Keep Out" signs and remain available to advise/help the with Hazardous Materials Response Team clean-up.

As a rule of thumb, for spills greater than one litre, especially flammable solvents or concentrated acids, the Fire Department should be called for stand-by support.

e) Advise clean-up only if:

- Appropriate spill control material is available.
- Protective clothing and equipment are available.
- More than one person is in the lab.
- There are no ignition sources present.

C) Spill Clean-up Procedures cont.

4) Review the MSDS and assess the hazard posed by the spill and determine the appropriate clean-up procedure. Determine the extent of evacuation required.

5) Gather the required equipment and materials. If the material is not available, call the Fire Department for assistance.

6) Put on appropriate protective clothing, a minimum of rubber gloves and lab coat. Solvents will require the use of a dual cartridge respirator equipped with acid gas/organic vapour cartridges.

7) Turn off any device, instrument, or machine that could enhance the spill.

8) Using the spill control compound, make a dike to contain the spill and prevent it from spreading.

9) Mix the spill control compound with the spill, wait for any neutralizing reactions to be complete (or test pH if necessary) and scoop the material into an impervious container. Label the container.

10) Contact the chemical waste disposal at 604-822-6306 to arrange for pick up.

11) An incident/accident report should be completed and sent to the Department Head, the D/A/B/S Committee and the OH&S office.

If a trained and knowledgeable person is not on the site, the clean-up should not proceed. If necessary the OH&S representative should go to the spill site to assist. The OHS office has some clean-up materials and protective equipment.

Clean-Up Procedures For:

1) Flammable solvents
2) Acids
3) Caustic material
4) Hydrofluoric Acid
5) Perchloric Acid

1) FLAMMABLE SOLVENTS

a) Report the spill to your supervisor or co-worker.
b) Inform that person that you are cleaning up the spill.
c) Wear protective clothing, nitrile or butyl rubber gloves and splash goggles.
d) Wear appropriate respirator protection.
e) DO NOT attempt to clean up a solvent spill with an ignition source present.

CLEAN-UP

(i) Apply Solvent Absorbent (Spill X-S, Solusorb or equivalent product from the perimeter inward, covering the total spill area).
(ii) Mix thoroughly with plastic scoops or shovel until material is again dry and free-flowing, and no evidence of solvent remains.
(iii) Transfer absorbed solvent to disposal bag provided and tie off the bag. Label.
(iv) Contact PPC Administrator for disposal instructions or the UBC Environmental Services Facility (ESF) at (604-822-6306) for directions on disposal of the bag and contents.

2.ACIDS

a) Report the spill and advise your advisor or a co-worker that you are cleaning it up.

b) Wear protective clothing, rubber gloves and splash goggles.

c) Use appropriate respirator.

d) **NOT INTENDED FOR HYDROFLUORIC ACID!**

CLEAN-UP

(i) Apply acid neutralizer (Spill X-A, Neutrasorb or equivalent product) from the perimeter of the spill, inward.

(ii) Carefully mix with the brushes and scoops provided. Carefully add more neutralizer and water if necessary.

(iii) When foaming subsides, check pH of a sample of the mixture.

- Add a scoopful of the treated material to about 100 mL of water.
- Test pH with pH paper
- If pH is not between 3 and 10, add more neutralizer and water.

(iv) When the acid material has been sufficiently neutralized, pick up neutralized material with the scoops available and transfer to a disposal bag or sealed plastic container. Seal bag with tie provided and label. Wipe up surfaces with wet sponge.

(v) Check with PPC Administrator or the UBC Environmental Services Facility (ESF) at 604-822-6306 for directions on disposal of the bag and contents.

3.CAUSTICS

a) Report spill to supervisor or co-worker and advise of intentions to clean it up.

b) Wear protective clothing, rubber gloves and splash goggles.

c) Wear appropriate respirator (ESPECIALLY FOR AMMONIUM HYDROXIDE).

CLEAN-UP

(i) Apply neutralizer for caustics (Spill X-C, Neutracit-2 or equivalent product) from the perimeter of the spill, inward.

(ii) Carefully mix with the brushes and scoops provided. Carefully add more neutralizer and water if necessary.

(iii) When foaming subsides, check pH of a sample of the mixture.

- Add a scoopful of the treated material to about 100 mL of water.
- Test pH with pH paper
- If pH is not between 3 and 10, add more neutralizer and water.

(iv) When the caustic material has been sufficiently neutralized, pick up neutralized spill with the scoops available and transfer to a disposal bag or sealed plastic container. Seal bag with tie provided and label. Wipe up surfaces with wet sponge.

(v) Check with PPC Administrator or the UBC Environmental Services Facility (ESF) at 604-822-6306 for directions on disposal of the bag and contents.

4.HYDROFLUORIC ACID (Avoid any Exposure)

a) Report the spill to your supervisor or co-worker and your intentions of cleaning up.

b) Wear protective clothing, rubber gloves and splash goggles.

c) Use appropriate respirator.

CLEAN-UP

(i) Apply Fluoril fluoride (or equivalent neutralizer for HF) from the perimeter of the spill, inward. A volume of least seven (7) times that of the spill should be used, or until a white precipitate ceases to form.

(ii) Carefully mix with the brushes and scoops provided.

(iii) Activate Neutrasol secondary neutralizer by mixing with cool water and slowly apply from perimeter, inward. Mix thoroughly until a blue colour is secured.

(iv) Add sufficient Liquisorb absorbent to completely absorb the spill.

(v) Pick up saturated Liquisorb with scoops available and transfer to plastic disposal bag or sealed plastic container. Seal bag with tie provided and label. Wipe up surfaces with wet sponge.

(vi) Check with PPC Administrator or the UBC Environmental Services Facility (ESF) 604-822-6306 for directions on disposal of the bag and contents.

ALTERNATE METHOD:

Apply solid calcium carbonate from the perimeter of the spill, inward. When the hydrofluoric acid has been absorbed, mix thoroughly with a plastic scoop. Add a scoopful of the mixture to about 100 mL of water. Test the pH with pH paper. If the pH is between 7 and 10, scoop the solid into a plastic container of water. Let stand until the white solid settles out of solution. Decant the solution to the drain with at least 50 volumes of water. Package the solid residue in a plastic bag, seal and label.

Check with PPC Administrator or the UBC Environmental Services Facility (ESF) at (822-6306) for directions on disposal of contents.

5.PERCHLORIC ACID

a) Report the spill to your supervisor or co-worker and your intentions of cleaning up.
b) Wear protective clothing, rubber gloves and splash goggles.

CLEAN-UP

(i) Apply acid neutralizer (Spill X-A, Neutrasorb or equivalent product) from the perimeter of the spill, inward. Add water to dilute acid.
(ii) Mop up with rags or paper towels.

CONTAMINATED PAPER OR RAGS (COMBUSTIBLES) MUST BE KEPT WET TO PREVENT COMBUSTION UPON DRYING.

(iii) Place rags or towels in a plastic bag, seal then put into a flammable waste disposal can.
(iv) Wipe up spill site with wet rags and dispose in the manner described above.
(v) Check with PPC Administrator or the UBC Environmental Services Facility (ESF) at 604-822-6306 for directions on disposal of the bag and contents.

SPILL CART CHECK LIST

The following are suggested items to be included on a spill cart:

Quantity	Description
1 each	Instruction Booklet
1 each	SPILLKART, with rigid liner
1 each	Mop Bucket, 35 quart
1 each	Wringer
1 each	Printed Floor Sign (slippery when wet)
1 each	Glass Disposal Box, 8" X 8" X 10"
2 each	Chemical Spill Clothing Kit - MUST BE SEALED
10 each	Spill Control Pillows, 1 liter size
5 each	Hazardous Waste Disposal Bags 12" X 18"
5 each	Biohazard Waste Disposal Bags 12" X 24"
5 each	Radioactive Waste Disposal Bags 12" X 18"
2 each	Yellow SPILLKART Liners 36" X 48"
20 each	HF Spill Pads 12" X 12" (20 per pkg)
l Kg	Hg ABSORB Powder
1 box	Hg/VAP ABSORB
1 each	Acid Neutralizer shaker, 2.8 Kg
1 each	Caustic Neutralizer Shaker, 2.8 Kg
1 each	Spill Squeezee, Floor Size, 18" Head
1 each	Spill Squeezee, Bench Size, 8" Head
1 each	24 ounce Mop Head and Handle
1 each	Polypropylene Broom
1 each	Bench Brush
1 each	Dust Pan 1 roll Chem/Kleen-Ups Towels, 9 3/4" X 100 ft. roll
1 each	Sponge
1 each	Liquid Cleaner, 32 ounce
1 each	Bleach, 1 gallon 1 roll pH Paper 1 roll Barricade Tape, 100 feet
1 each	Safety Flashlight
1 each	Tongs, 20" long
1 each	Cover, for CART

CHEMICAL SPILL CLOTHING KIT

QUANTITY	DESCRIPTION
1 each	Total Body Coverall, Polylaminated TYVEK
2 pair	Foot Covers, Disposable, Polyethylene
1 pair	Nitrile Gloves
1 package	Disposable Polyethylene Gloves
1 pair	Chemical Splash Goggles, Fog Free Lens
1 each	Hydrogen Fluoride Respirator
1 each	Dust and Mist Respirator
1 each	Toxic and Hazardous Chemicals In Industry Chart, Pocket Size

REQUIREMENTS FOR LABORATORY STORAGE OF FLAMMABLE LIQUIDS

DEFINITION

In the British Columbia Fire Code a liquid is defined as flammable if it has a flash point below 37.8 °C.

CONTAINERS

The storage of flammable liquids shall be permitted only in the following containers:

1. Pre-packaged containers meeting the requirements of the Canadian Transport Commission Regulations for the Transportation of Dangerous Commodities and having a capacity not exceeding five litres. A pre-packaged container is a container in which the liquid is offered for sale by the manufacturer or supplier, and it is not intended for re-use.

2. Metal safety cans conforming to ULC-C30 and having a capacity not exceeding five litres.

3. Containers made from material appropriate to the liquid contained and having a capacity not exceeding one litre. This category includes wash bottles and chromatograph reservoirs.

4. Laboratory stills having a still-pot capacity not exceeding five litres. It is recognized that some laboratories need freshly distilled flammable liquid and store liquid in the still between distillations.

5. Other containers acceptable to the UEL Fire Department. An example of the category is the organic solvent waste container, of five litre capacity, supplied to laboratories by the University and imprinted "UBC Organic Solvent Waste".

HANDLING

When transferring flammable liquid from a 45 gallon drum to smaller containers, the drum must be grounded or bonded to prevent build up of static charge.

LABELLING

All of the above containers of flammable liquids shall be labelled with the identity of the liquid contained and with a warning that the liquid is flammable.

QUANTITIES

1. Not more than 25 litres of flammable liquids shall be permitted in the open laboratory, outside of approved storage cabinets and approved refrigerators. The volume of the liquids shall be determined by the capacity of the containers, so that a 500 mL bottle counts as 500 mL, even when it is only partly full.

2. Each laboratory shall be allowed one flammable liquid storage cabinet. Approval of the UEL Fire Department must be obtained for the installation of additional cabinets or for the installation of flammable liquid storage refrigerators. The UBC organic solvent waste containers shall be stored in an approved storage cabinet if such a cabinet is located in the laboratory. When practicable, flammable liquids should be returned to storage at the end of each working day.

ADMINISTRATION

In each department the head shall be responsible for ensuring compliance with these requirements. Laboratories shall be monitored at weekly intervals. The routine monitoring may be delegated to primary investigators, department safety committees or floor wardens appointed in connection with an approved fire safety plan.

These regulations shall be administered by the Director of Occupational Health and Safety, to whom any requests for approvals, variances or information shall be addressed.

PRESSURE REGULATOR HANDLING AND USE

Pressure regulators are used in a gas system to reduce the pressure from high-pressure sources, such as gas cylinders or gas supply pipelines, to a safe working pressure range.

A pressure regulator should be attached to a cylinder without forcing the threads. If the inlet of a regulator does not fit the cylinder outlet, no effort should be made to try to force the fitting. A poor fit may indicate that the regulator is not intended for use on the gas chosen. (Regulators for "fuel" gases -H_2, acetylene, etc.- generally have a left hand thread.)

The following procedure should be used to obtain the required delivery pressure:

1. After the regulator has been attached to the cylinder valve outlet, turn the delivery pressure-adjusting screw counter clockwise until it turns freely.

2. Open the cylinder valve slowly until the tank gauge on the regulator registers the cylinder pressure. At this point, the cylinder pressure should be checked to see if it is at the expected value. A large error may indicate that the cylinder valve is leaking.

3. With the flow-control valve at the regulator outlet closed, turn the delivery pressure-adjusting screw clockwise until the required delivery pressure is reached. Control of flow can be regulated by means of a valve supplied in the regulator outlet or by a supplementary valve put in a pipeline downstream from the regulator. The regulator itself should not be used as a flow control by adjusting the pressure to obtain different flow rates.

RULES FOR HANDLING COMPRESSED GASES

1. Know the hazards associated with the gases you work with.
2. Use the appropriate personal protective equipment (i.e.footguards).
3. Keep cylinders away from fire, sparks, and electricity.
4. Always use a hand truck for transport. Chain cylinders to handtruck.
5. Do not transport in closed vehicles.
6. Cylinders should be chained in place or other wise secured at all times.
7. Protect cylinders from any objects that might cut or scrape them.
8. Do not drop cylinders, or otherwise permit them to strike each other.
9. Leave valve cap on cylinder until secured and ready for use.
10. Ground all cylinders containing flammable gases.
11. Use only in an upright position.
12. All valves should be closed when not in use.
13. Use the proper regulator for the particular gas.
14. Carefully open all valves and adjust gas flow rates.
15. Always consider cylinders to be full and handle accordingly.
16. Discontinue using a high-pressure cylinder when the pressure approaches 30 psi, and clearly mark EMPTY; then remove for return to vendor.
17. Oily regulators should never be used with oxygen. Oxygen under pressure will rapidly oxidize oil or grease, resulting in an explosion.
18. Acetylene under pressure can decompose with explosive force. It can explode with extreme violence if ignited. Copper or brass (with more than 65% copper) can form explosive compounds in contact with acetylene.
19. Glass equipment should not be pressurized. A general rule is no pressure greater than 10 inches of water, without special protective equipment.
20. Never mix gases in a cylinder. Explosion, contamination, corrosion, and other hazards can result.
21. Cylinders containing large amounts of a flammable gas (hydrogen, acetylene, ethylene) should be stored outside in a protected area and piped into the working area.
22. Store in a fire-proof, well ventilated area.
23. Storage area temperature should not exceed 100 F.
24. Store gases supporting combustion (0_2, CO_2 etc.) at least 25 feet from fuel gases, preferably in another gas storage area.
25. Store with valve caps in place, even when empty.

RESPIRATOR PROGRAM

A written respirator program and regular training of users must be implemented where respirators are required to be used. Respirators are to be used by employees or students for protection from respiratory hazards encountered during regular work conditions, repair, maintenance and spill clean-up. **Respirators must only be used by personnel who have been appropriately trained and fit-tested.**

RESPIRATOR SELECTION PROCEDURES

A. Identify Types of Hazardous Materials and Respirator Needs

1. In a lab setting, respirators are generally used for clean-up of spills and may be required in areas where solvents are used outside of a fume hood. A cartridge type respirator may only be used for protection against materials which will provide an adequate warning when the mask leaks or the material has broken through the cartridges. Consult with OH&S if further information is required. If the material has poor warning properties and is of significant toxicity, then it must be handled in a fume hood.

2. Appropriate respirators should be considered where corrosive materials such as volatile concentrated acids and ammonia are used.

B. Select Appropriate Respirator

The following cartridges are available for use with half-mask and full-face respirators. Select the cartridge which is designed for the type of chemical you are using. For spills, organic vapour-acid gas cartridges are recommended.

Cartridge Type	Colour Code
A. Organic vapour/acid gas	yellow
B. Organic vapour only	black
C. Dusts/particulates/aerosols	purple HEPA filter
D. Ammonia, amines	green

There are several other types of cartridges that address other classes of specific airborne hazardous materials. Cartridges which can combine two of the above types are also available.

C. Fit Testing of Respirators

A **fit test must be performed** by potential respirator users before use in an emergency situation.

Tests 1 and 2 can be done before attaching the cartridges to the face piece. Place the wide part of the face piece over the chin, then place the narrow portion over the nose. Put the straps over the back of the head and around neck, then tighten.

1. **Inhalation test:** Cover the inhalation valves (where cartridges are attached) and breathe in normally. The face piece should collapse against the face. If leakage is noticed around the mask, it does not fit properly. Adjust straps and repeat. Once leakage no longer occurs, go on to the exhalation test.

2. **Exhalation test**: Cover the exhalation valve (centre front) with hand and exhale normally. Note if leakage occurs. Adjust until leakage does not occur.

3. **Chemical test (<u>where possible</u>)**: Attach cartridges to respirator. Wave a sample of banana oil (amyl acetate - a drop or two in a tissue) or gas from a smoke tube (highly irritating) around your face. If the odour can be detected, leakage is occurring and further adjustments must be done. Carry out this test while moving your head sideways, then up and down.

NOTE: If leakage still occurs or the respirator fits uncomfortably tight, try a different size of mask or different brand. IF A PROPERLY FITTING RESPIRATOR CANNOT BE FOUND, DO NOT USE ONE. <u>SKIN MUST BE CLEAN SHAVEN</u> where the mask fits the face.

STORAGE AND MAINTENANCE PROCEDURES

A. Storage - Respirators and cartridges must be stored in sealed plastic bags or containers to protect them against dust, ozone, sunlight, excess temperatures, excessive moisture, chemicals, physical damage or distortion when not in use.

B. Maintenance - Wash respirators after each use:

1. Disassemble respirator and wash in warm detergent solution.

2. Rinse thoroughly in warm, clean water.

3. Allow parts to air dry before assembly.

4. Inspect and test after each cleaning to ensure respirator is in proper working order.

5. Defective respirators shall be tagged "out of service" and replaced or repaired.

C. Cartridge "Life"

Cartridge life will depend on the type of cartridge and frequency and time frame of use. HEPA cartridges (purple) filter out dust through a paper filter. At the end of their life, the holes in the filter are plugged and air cannot be inhaled through them. They should be discarded when breathing becomes difficult. Breakthrough of chem ical type cartridges is indicated by odour or irritation characteristics of the material. If odour or taste or irritation of the nasal passages or eyes are experienced, then leave the area and replace the cartridge. This is not an acceptable procedure if the material is toxic at very low levels. It is better to discard cartridges after each use unless it has been worn for a very short time in a low concentration of the contaminant. This would require comprehensive documentation of use of cartridges.

PEROXIDE TESTING PROGRAM

Many laboratory solvents and reagents form peroxides in explosive quantities. Peroxide inhibitors are usually included in compounds that readily form explosive peroxides, but many not be sufficient to control peroxide formation once the container has been opened. All peroxide forming materials must be carrying a label that indicates date of receipt of the material as well date of opening and testing. A sample label is shown below:

PEROXIDIZABLE COMPOUND

	Received	Opened
Date	_____	_____

Discard or test within
_____ months after opening

Test Dates ___ ___ ___ ___
Test Results ___ ___ ___ ___

Examples of compounds that require testing every 3 months after opening and before use are;

di-isopropyl ether potassium metal sodium amide
divinyl acetylene vinylidene chloride

Examples of compounds requiring testing every 12 months after opening and before use are:

dioxane diethyl ether tetrahydrofuran
diglyme cyclohexene tetralin
acrylonitrile styrene butadiene
acrylic acid methyl methacrylate vinyl chloride

Each laboratory must keep an inventory list of all peroxidizable material. The list should be reviewed periodically and compounds be tested fir peroxide formation or discarded. Store all peroxidizable compounds away from heat and light and protected from physical damage and ignition sources.

There are several methods for the detection of peroxides. Special peroxide test strips are available. For more information, call the Chemical Safety Officer at 604-822-5909.

HAZARDOUS WASTE DISPOSAL

Refer to the ***Hazardous Waste Disposal Manual***, July 1998 from UBC Environmental Services Facility when disposing of hazardous waste material. Topics covered in manual include:

1. Biohazardous Waste Disposal
2. Radioactive Waste Disposal
3. Disposal of Laboratory Chemicals
4. Ethidium Bromide Waste Disposal
5. Organic Solvent Recovery and Disposal
6. Waste Battery Disposal
7. Waste Oil Disposal
8. Disposal of Unknown Chemicals
9. Disposal of Explosive Chemicals
10. Polychlorinated Biphenyl Disposal
11. Biomedical Waste Disposal

1. GENERAL SAFETY PRINCIPLES:

Electrical currents of astonishingly low amperage and voltage under certain circumstances may result in fatal shock. Low-voltage DC circuits do not normally present a hazard to human life, although severe burns are possible. Voltages as low as 24-V AC can be dangerous and present a lethal threat. The time of contact with a live circuit affects the degree of damage, especially as far as burns are concerned.

a) Only persons qualified by training or experience should maintain electric or electronic equipment.

b) When handling electric wires, never use them as supports and never pull on live wires.

c) Portable heaters must be located so as to prevent heating of combustible material.

d) Any electrical failure or any evidence of undue heating of equipment should be reported immediately to the instructor.

e) Cardiopulmonary resuscitation often will revive the victims of high voltage shock (including lightning strikes).

2. STATIC ELECTRICITY AND SPARK HAZARDS

Some protection from static electricity and sparks in hazardous areas and in handling flammable solvents and other chemicals is obtained by proper grounding and bonding of containers and equipment and by blanketing with inert gas when needed. Some common potential sources of sparks and electrostatic discharges are:

a) metal tanks and containers,

b) plastic laboratory aprons,

c) the making and breaking of an electric circuit while circuit is energized,

d) metal-based clamps, nipples, or wire used with nonconducting hoses,

e) high-pressure gas cylinders upon discharge, and

f) brush motors and hot air dryers.

Maintenance of Machine Shop Equipment

OVER VIEW:

Any maintenance work done on the machine shop equipment shall be carried out by only authorized personnel and with the **KNOWLEDGE and AUTHORIZATION** of the Machine Shop Operator.

After the performance of the required work, the Machine Shop Operator must WITNESS the energizing and TESTING OF OPERATION of the equipment.

The following procedure must be followed on every occasion.

After disconnection but before working on the equipment, the employee shall attempt to operate/request the operation of the equipment to ensure that it is without power.

AUTHORIZED employees must lock out and label the electrical switches which cut off the power supply to the effected equipment with their personal padlock before performing any maintenance or repairs on the effected equipment.

The lock shall be clearly labeled with the **name of the employee using the lock, and date of lock out.**

The person who installed the lock is the only person who can remove it. **Employees are forbidden to remove locks applied by other employees.** Prior to the removal of the lock and before the equipment is powered up, **a complete inspection of the equipment shall be made. This inspection is to ensure that all safety devices (belt guards, etc.) are in place, no foreign objects (tools, etc) are left in, on or about the machinery and that all employees are clear of the equipment at power up.**

All personnel must adhere to the above procedure.

DISCONNECTING FROM POWER SUPPLIES

Where the equipment has a PLUG, disconnect the plug from the power source and insert plug into a plug lockout device, which must show the following:

- the name of the employee who has applied the tag.
- the date of lock out.

After disconnection but before working on the equipment, the employee shall attempt to operate/request the operation of the equipment to ensure that it is without power.

Where the equipment is supplied from a circuit breaker in an electrical panel, the **AUTHORIZED** employee shall turn off the breaker supplying the equipment and apply a circuit breaker lockout, personal padlock and lock-out tag. The lock must be labeled to indicate the following:

- the name of the employee who has applied the tag.
- the date of lock out.

After disconnection but before working on the equipment, the employee shall attempt to operate/request the operation of the equipment to ensure that it is without power.

Where the equipment has its own integral lock-out disconnect switch, the **AUTHORIZED** employee shall turn off the integral disconnect switch, and apply his lock-out device to the switch and ensure that the switch cannot be turned on. The lock must be labeled to indicate the following:

- the name of the employee who has applied the tag.
- the section and area the employee is working in.

After disconnection but before working on the equipment, the employee shall attempt to operate/request the operation of the equipment to ensure that it is without power.

The PPC EMERGENCY/FIRE Safety Plan Manual can be found in the safety section of the PPC Reading Room.

Working Alone

Staff and students are encouraged not to work alone outside the normal working hours of 8:00 a.m. to 4:30 p.m. During instances where a staff or student is required to work alone arrangements are to be made by the individual to ensure for their own personal safety. Arrangements for other staff or students to check regularly on the welfare of persons working alone are recommended.

Staff and students are not to work alone in:

- Laboratories where chemicals are in use or where there is a risk of injury from the work being carried out by worker.
- Areas where power tools or equipment are in use
- Areas where moving machinery are involved