

UBC REPORTS

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Stephen Forgacs photo

Beaming From Side To Side

Construction workers and visitors to UBC's new Forest Sciences Centre are dwarfed by massive Parallam support beams, an advanced wood product developed in B.C. The building, located on Agronomy Road at East Mall, and the adjoining Centre for Advanced Wood Processing will be opened officially on Sept. 29 but faculty, staff and students have been moving in since the end of July.

Four awarded Order of Canada honours

The director of a major UBC-based earth sciences project, two UBC professors emeriti, and a UBC senator have been named to the Order of Canada.

Prof. Ron Clowes, Prof. Emeritus Charles Laszlo, and Senator Paul Lin were named members of the Order of Canada, while Prof. Emeritus Alan Cairns was named an officer of the Order, the second highest ranking.

Cairns is one of Canada's authorities in the field of political science. Many of his scholarly writings and essays have had a profound influence in changing and shaping modern Canadian politics. He is considered a knowledgeable and valued adviser on federal-provincial relations and has served on numerous Royal Commissions.

Clowes has spent much of the last decade leading a comprehensive project aimed at understanding the structure

and evolution of Canada's landmass and offshore continental margins (see Profile, page 12). Clowes, a geophysicist and professor in UBC's Dept. of Earth and Ocean Sciences, is director of Lithoprobe, Canada's largest and longest-lived national earth sciences research project.

During the past 30 years, Laszlo has worked on problems ranging from hearing research to practical applications. As director of UBC's Institute for Hearing Accessibility Research he created a unique environment where engineers, audiologists, physicians, educators, psychologists, and hard of hearing consumers worked together on hearing accessibility problems. Laszlo, who himself is hard of hearing, is an international leader in the effort to eliminate the stigma attached to hearing loss.

Lin's efforts have contributed to

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Klawe named new dean of Science

by Stephen Forgacs

Staff writer

Maria Klawe, vice-president, Student and Academic Services, has been appointed dean of the Faculty of Science.

Klawe has served as vice-president since February 1995. Prior to that she was head of the Dept. of Computer Science for six and a half years. She holds the Natural Sciences and Engineering Research Council (NSERC)-IBM Chair for Women in Science and Engineering for B.C. and the Yukon, which focuses on increasing the participation of women in information technology careers.

"I have enjoyed working with Maria over a number of years and look forward to working with her in this new role," said

Barry McBride, UBC vice-president, Academic. "She brings a wealth of experience in the Faculty of Science to the dean's position, as well as the experience she has gained from her responsibilities as a senior vice-president."

During her term as vice-president, Klawe worked with the Campus Advisory Board on Student Development to increase students' communication and involvement with the university through a variety of means, including open forums, surveys, and the campus-wide orientation program, Imagine UBC. She also worked to improve access to information technology through Advisory Committee on Information Technology initiatives such as the campus

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Klawe

Doctors-to-be get rural experience

By Hilary Thomson

Staff writer

From Iqaluit in the Northwest Territories to Pender Island, UBC's medical students are finding out what it means to be a doctor in a small town.

This year's summer rural practice elective program has 109 second-year students working with doctors in 56 communities around B.C., the Yukon and the Northwest Territories. Some students also work in underserved facilities in Vancouver.

Students select their location and work a minimum of 40 hours per week in four- to eight-week terms. For most students, this is their first clinical experience. They are supervised by doctors who volunteer their teaching time.

"Variety is the best part of this assignment," says Shannon Douglas, who

is completing a five-week term at Fraser Lake, a town of about 2,000 people west of Prince George.

"I've helped care for a dying patient, removed a set of tonsils and helped deliver two babies - all under supervision of course," she says. "Any time anything interesting came up, I was called."

Douglas lives in a trailer on her parents' property near the diagnostic and treatment centre where she works. She loves the northern countryside.

Many local doctors seem to have a more active life outside their practice than city doctors, she says, an aspect of rural practice she finds appealing. Long unpaid hours on call, however, are a negative feature. Overall, she says the experience has reinforced her desire to become a general practitioner.

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Web Wise

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It's out with the old as the Library converts to a new Web-based system

Smoke Signals

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A UBC forest researcher says forest fires have ecological value

Terra Incognita

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Profile: When Ron Clowes talks history, he's talking millions of years

"cool urban hot spots"

TIM OKE, Geography
KATHRYN RUNNALS, (PhD, 1998),
Atmospheric Science Program

Klawe

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connectivity project, the faculty workstation initiative, and the provision of e-mail and Internet access to all students, faculty and staff.

As a researcher, Klawe has gained particular recognition for her work on the use of interactive multimedia in education.

She is founder and director of the collaborative Electronic Games for Education in Math and Science (E-GEMS) project. Through E-GEMS, scientists, educators, writers, and game and educational software developers work together to develop interactive multimedia and curriculum materials to teach mathematics and science.

Klawe takes over from Acting Dean David Measday and former dean McBride.

Order

Continued from Page 1

strengthening the diplomatic and commercial relationships between Canada and China. He was appointed to UBC's Senate by B.C.'s lieutenant-governor in 1994 and re-appointed to a second term in 1997. He is also an honorary professor with UBC's Institute of Asian Research.

The Order of Canada was established in 1967 to recognize outstanding achievement and service in various fields of human endeavor.

Rural

Continued from Page 1

tioner in a rural community.

Student Cathryn Brown, working in a Queen Charlotte City clinic and hospital, agrees.

"There's an incredible amount of variety - everything from the flu to motor vehicle accidents to cancer," she says.

She was surprised by the doctors' encouragement to perform procedures herself - she had expected to observe only.

A life-long Vancouver resident, Brown has also been impressed with northern living.

"Everyone up here seems to be a character," she says.

Communicating with students and doctors who are widely separated geographically has been a challenge for administrators. This summer, they introduced a Web-based network designed for dialogue and as a teaching supplement.

"We chose palliative care as the subject for the pilot because it's a universal concern," says Dr. Bob Woollard, director of undergraduate programs in the Dept. of Family Practice.

The network provides a link to on-line periodicals, palliative care Web sites and a secure chat group where students and Vancouver palliative care specialist Dr. Doris deGroot can reflect on their experiences. A committee of students and faculty will be evaluating the effectiveness of the network at the end of the summer.

Students receive a stipend of about \$200 a week from provincial government grants and charitable donations. Students do their own fund-raising during the year to supplement these sources.

The rural practice program, an elective since 1974, becomes a required part of the revised undergraduate medical curriculum in 1999.



THE UNIVERSITY OF BRITISH COLUMBIA

Public Information Meeting

on The Liu Centre for International Studies

Aug. 20, 1998, 12:00-2:00pm
C.K. Choi Building, 1855 West Mall

To present and review the development permit submittal and plans for the approved Liu Centre for International Studies to be constructed on the International House site, which also houses Panhellenic House.

The 1,700-square-metre facility will be a three-storey signature building nestled within the existing trees on the site. It will comprise academic offices as well as seminar, conference and lecture facilities. A Development Permit Application has been submitted and construction is anticipated to begin spring 1999, occupancy summer 2000.

For further information, call Jim Carruthers, Campus Planning and Development, 822-0469.

We Need You

to meet people, have fun and support United Way!

We already have a great team of volunteers but the more there are, the less work and more fun for everyone!
Are you new to campus and want to meet people from other areas? Do you want to get involved with staff, faculty and students from all across the campus? Do you want to help support your community?

No experience needed - training will be given - must be eager to have fun!

If you want to know more, please contact one of the following:

Elis Courtney (UBC United Way Campaign Chair for 1998)
822-6192 or e-mail elis.courtney@ubc.ca

Doug Napier, Facility Manager, Land & Buildings
822-4116 or e-mail dougn@plantops.ubc.ca

Aideen Clery, ELI, Continuing Studies
822-1442 or e-mail aideen.clery@ubc.ca

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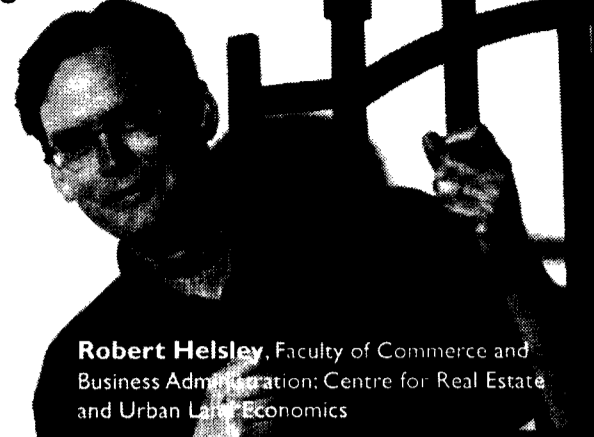
Jonathan Berkowitz, Ph.D

4160 Staulo Crescent, Vancouver, B.C., V6N 3S2

Office: (604) 263-1508

Fax: (604) 263-1708

an explosion of gated communities



Robert Helsley, Faculty of Commerce and Business Administration; Centre for Real Estate and Urban Land Economics

Fear of crime has led to an explosion of gated communities - walled residential developments that promote safety through restricted access. Robert Helsley's study of crime and urban development shows that "gating" by one community diverts crime to other areas. In the extreme, it may actually increase the number of criminals and level of crime in the central city.

Think About Cities

Think
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THE UNIVERSITY OF BRITISH COLUMBIA

Ethical Guidelines for Preferred Supplier Agreements

UBC is inviting input from the campus community on the draft *Ethical Guidelines for Preferred Supplier Agreements*. Comments will be incorporated into a revised document for approval by the Board of Governors at its November meeting.

The draft guidelines are available on the World Wide Web at <http://www.external-affairs.ubc.ca/ethicguide.html> and will be published in *UBC Reports* in September. We welcome your comments to October 9, 1998. You may reach us:

by mail: Business Relations Office
201 - 6328 Memorial Road
Vancouver BC V6T 1Z2

by fax: (604) 822-8102

by e-mail: lisa.fedorak@ubc.ca

Edwin Jackson

224 3540

Astronomy teaches the correct use of the sun and planets. *Stephen Leacock*

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UBC REPORTS

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Forest fires not all bad, says forest researcher

by Stephen Forgacs

Staff writer

Forest fires that sweep the province after a long dry period play an important role in maintaining ecosystems and ensuring the survival of certain plants and animals, a UBC Forest Sciences professor says.

Each year, thousands of hectares of forest and grassland in the province go up in smoke. As of last week there were more than 500 forest fires burning in B.C.

But for generations of Canadians who grew up hearing the U.S. Forest Service's Smokey the Bear say forest fires were bad, television images of raging fires leave impressions of devastation.

"Smokey the Bear made people feel that fire was strictly the enemy of the forest. It killed animals, destroyed trees and plants, caused soil erosion, and fouled streams," says Assoc. Prof. Mike Feller. "Fire does have a negative impact, but it also has positive effects which are very much part of the natural ecological cycle."

Certain trees and plants rely on fire to provide conditions for germination while animals such as deer and elk thrive on the vegetation that grows on burned sites, Feller says.

Feller has studied the effects of forest fires for years, in particular their impact on nutrient cycles, but has delved into a range of other issues as well.

Both his and other researchers' findings suggest that, after years of adhering to a policy that directed efforts be made to fight every forest fire in the province, the B.C. Forest Service's move to a more selective approach to fighting fires makes sense in both dollars and ecology.

Feller says most North American jurisdictions now assess fires based on factors that include risk to human life, property, timber supply, recreation and wildlife. The weight that is placed on factors depends on regional economies as well.

"In the Canadian Arctic we expend resources fighting fires that threaten the habitat of fur-bearing animals, such as marten, to protect the local economy," he says.

Among the ecological factors that should be considered in forest management policies, says Feller, is the importance of early successional conditions, which occur in the period immediately after a forest fire when vegetation reappears.

This period provides food for deer, moose and elk, which eat low-lying shrubs, grasses and flowers — plants which disappear as the forest grows and prevents sunlight from reaching the ground.

"Without fire, you would have fewer early successional plants, and far fewer of these animals," says Feller.

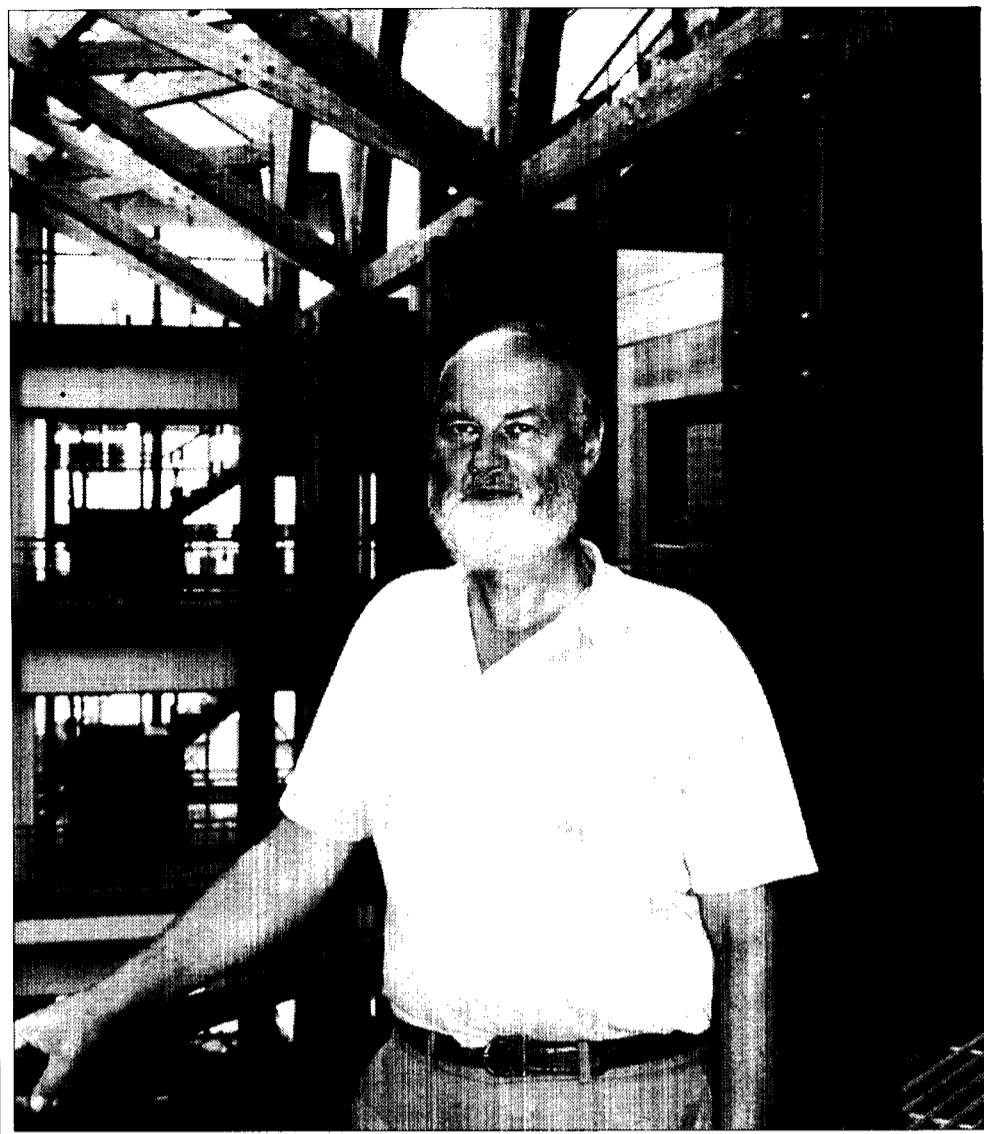
Certain plants, such as the flower *Corydalis sempervirens*, will germinate only after being exposed to the heat of a fire and require strong sunlight to grow.

Trees, such as lodgepole and jack pine, also rely to a certain extent on the heat of fire to open their cones and permit germination.

Efforts to simulate natural disturbances such as fire through clearcutting and other forest management practices have met with only limited success, says Feller. He points out that forest fires tend to leave a natural mosaic of burned and unburned forest, and that even a severe forest fire, in which temperatures can reach 700 to 800 degrees Celsius, will leave some vertical trees that play a role as wildlife habitat.

Feller has also found that while nutrient loss from soils as a result of forest fires can have serious implications in some alpine regions in the interior of the province, nutrients in coastal regions are quickly replenished.

"Air pollution does wonders in replacing nutrient values lost by fires on the coast," he says.



Stephen Forgacs photo

Smokey the Bear left us thinking all forest fires were to be prevented, but Forest Sciences Prof. Mike Feller's research suggests that's not always the best ecological approach.

Engineer, 18th-century expert among Royals

An authority on the 18th century and an expert in steel manufacturing processes are among the six UBC faculty members recently elected to the Royal Society of Canada.

Elected were Mathematics Prof. Martin Barlow, Prof. Emeritus Larry Bongie of the Dept. of French, Geography Prof. David Ley, Prof. Indira Samarasekera of the Dept. of Metals and Materials Engineering, Earth and Ocean Sciences Prof. Leslie Smith and Prof. Carl Walters of the Zoology Dept. and Fisheries Centre.

Fifty-seven new fellows will be inducted at a ceremony in Ottawa Nov. 20.

Barlow is one of the world leaders in probability theory. He has made fundamental contributions in a variety of fields, but his most notable work has been on the mathematical theory of diffusion and heat conduction on fractals.

Bongie is a researcher and author whose work demonstrates mastery of 18th-century literary, philosophic and historical studies. The French Enlightenment is his chief subject field, but his range extends to figures associated with 18th-century Britain. His five groundbreaking books on five different authors place him in the top rank of 18th-century scholars.

Ley is one of the most distinguished contemporary social geographers and is considered one of the most astute analysts of the Canadian city. Author of five books and some 75 articles, his work deals with the changing social fabric of the inner city and also raises important questions about representation, culture

and politics, and about the ways in which we know and describe space.

Samarasekera is best known for her outstanding work on the continuous casting of steel. In this work she has combined mathematical modelling of heat flow and stress fields in the system with unique in-plant measurements. These results have led to major improvements in continuous casting in plants throughout the world.

Smith has received national and international recognition for his original research contributions to the field of hydrology. His work has encompassed stochastic analysis of fluid flow and solute transport, modelling of transport process in fractured rock, consideration of thermal effects on groundwater flow, and the assessment of the role of ground-water in geodynamic processes.

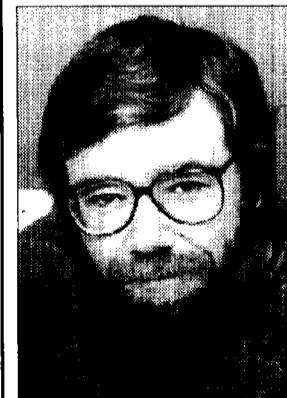
Walters has contributed broadly to research in population and community ecology with publications ranging from the study of the physical phenomena of lakes and other fresh waters and plankton biology to the development of models for fisheries stock assessment. He is best known for his development of models known as adaptive management, which use proper experimental design to evaluate renewable resource management policies.

Fellowship in the Royal Society of Canada is considered Canada's senior academic accolade.

Among Canadian universities, UBC has the second highest number of Royal Society fellows with 135. The University of Toronto has 250.



Samarasekera



Smith

Library says goodbye UBCLIB, hello Web

By Hilary Thomson

Staff writer

When the old UBCLIB computer system shuts down Sept. 1, it will mark the last chapter in the Library's conversion to its new Web-based automated library system.

"UBCLIB was the last piece of the old text-based system," says Library Information Services Head Martha Whitehead. "We kept it available for searching but had to stop updating its catalogue and it's now more than a year out of date. It's time to make the final switch."

The UBC Library Web site, introduced in May 1997, will replace all UBCLIB databases and services.

The move to a Web-based system was inevitable, Whitehead says.

Some of the major parts of the UBCLIB system were almost 20 years old, she says. As well, it used locally developed programs running on an obsolete operating system via an old mainframe computer. A breakdown in any one of these areas would threaten the millions of records stored at the Library.

The move to a new system also tied in with the campus-wide administrative systems migration that phased out all of the old mainframe equipment, operating systems and associated communications network.

"The old system served us well and was innovative for its time," says White-

head. "But as one of the largest research libraries in Canada, we have to keep pace with constantly changing technology."

The new UBC Library Web site is a totally integrated information system that unites many resources under one interface. With just basic Web browser skills, users can move easily through article indexes on various systems, electronic course materials or subject guides. They can also search for a journal or on-line text and then link directly to its full text, a feature not found in the old system.

The Library Web site also includes InfoGate, an alternative text-based interface to the catalogue of UBC Library holdings.

Many new databases have been added to the UBC Library Web site this year and the site is being redesigned for September based on feedback from students, faculty and staff.

A training session on the Web site is being offered to faculty and graduate students on Aug. 26, from 9:30 a.m. to noon at the Koerner Library, Sedgewick Teaching Lab, with extra sessions in the fall. To register, e-mail debaron@interchange.ubc.ca.

Student training sessions will be scheduled throughout the fall. For further information on training, call 822-5424.

The UBC Library Web site is located at www.library.ubc.ca.

Calendar

August 16 through September 5

Monday, Aug. 17

Green College Member Speakers Series

Creating An international Indigenous University. Claudine Montes, Centre for the Study of Curriculum and Instruction, Green College at 5:30pm. Call 822-1878.

Sunday, Aug. 23

Exhibition

Chinese Paintings. LO Quin Yuan, artist. Asian Centre, from noon-5pm. Continues to Aug. 31. Call 822-0810.

Monday, Aug. 24

Graduate Students Workshop

Instructional Skills. Faculty Development Seminar Room (basement of David Lam Building, use outside entrance behind Trekkers), from 8:30am-5pm. Continues to Aug. 26. Call 822-6827 to register.

Monday, Aug. 31

Graduate Students Workshop

Instructional Skills. Faculty Development Seminar Room (basement of David Lam Building, use outside entrance behind Trekkers), from 8:30am-5pm. Continues to Sept. 2. Call 822-6827 to register.

Seminar

Butterfly Wing Patterns: The Development And Evolution Of Decoration. Vernon French. IRC #4, 3:45pm. Refreshments at 3:30pm. Call 822-2304.

Green College Member Speakers Series

The Male Sex: A Risk Factor For Heart Disease. Christine Crowley, Pharmacology and Therapeutics, Green College at 5:30pm. Call 822-1878.

Friday, Sept. 4

Lecture

Linking Canadian And African Health Professionals: Working Together To Provide Health Care To Communities In Crisis In Northern Uganda. Gizaw Shibru, Canadian Physicians for Aid and Relief. Mather 253, from 9-10am. Call 822-2772.

Saturday, Sept. 5

Exhibition

Journey To Huangshan: The Yellow Mountain. David Guang-Wei Yeung, artist. Asian Centre, from 11am-5pm (weekdays), noon-5pm (weekends). Continues to Sept. 13. Call 439-1913 or 822-0810.

Notices

Volleyball

Faculty, Staff and Grad Students Volleyball Group. Every Monday and Wednesday. Osborne Centre Gym A from 12:30-1:30pm. No fees. Drop-ins and regular attendees welcome for friendly competitive games. Call 822-4479 or e-mail kdcs@unixg.ubc.ca.

Parents with Babies

Have you ever wondered how babies learn to talk? Help us find out! We are looking for parents with babies between four to 21 months of age to participate in language development studies. If you are interested in bringing your baby for a one-hour visit, please call Dr. Janet Werker's Infant Studies Centre, Psychology, 822-6408 (ask for Monika).

Studies in Hearing and Communication

Senior (65 years or older) volunteers needed. If your first language is English and your hearing is relatively good, we need your participation in studies examining hearing and communication abilities. All studies take place at UBC. Hearing screened. Honorarium paid. Please call The Hearing Lab, 822-9474.

Parents With Toddlers

Did you know your child is a word-learning expert? Help us learn how children come to be so skilled at learning new words! We are looking for children (two-four years old) and their parent(s) to participate in language studies. If you are interested in bringing your child for a forty-five minute visit please call Dr. Geoffrey Hall's Language Development Centre, Psychology at UBC, 822-9294 (ask for Kelley).

Research Study

Relationship Study. Heterosexual men (25 years of age and older), in relationships of greater than six months needed for a UBC study of relationships. Complete questionnaire at home, receive \$10. Call 822-2151.

UBC Campus Tours

The School and College Liaison Office offers guided walking tours of the UBC campus most Friday mornings. The tours begin at 9:30am and run for 90 minutes. Interested students must pre-register for the tours at least one week in advance. Call 822-4319.

UBC Botanical Garden Tours

The Nitobe Memorial Garden, Botanical Garden and Shop in the Garden are open from 10am-6pm daily to October 4. Tours of the garden will be given by The Friends of the Garden every Wednesday and Saturday at 11am. Tours are included in the price of admission to the garden. Inquiries for the gardens call 822-9666 and for the Shop call 822-4529.

Testosterone Study Volunteers Needed

Men aged 55-70 with low free testosterone are needed to test the effects of an approved form of oral testosterone (Andriol) on bone mass, body composition and sexual function. Principal investigator, Dr. Richard Bebb. For more information or to sign up for this study please contact Mary-Jo Lavery, RN (Study Coordinator) at 682-2344 ext. 2455.

Parents With Young Adults

Today it is much more common for young people to return home to live with their parents. As part of a research study, mothers and fathers

with the 20-30 year olds who have returned home are invited to participate in parent/adult-child conversations about their experiences. Three chances to win \$100. Call Michele Paselukho, Counselling Psychology 822-5259 or 269-9986.

Museum Of Anthropology Exhibition

Recalling The Past: A Selection Of Early Chinese Art From the Victor Shaw Collection; Vereinigung: Nuu-chah-nulth/Gitksan artist Connie Sterritt; Transitions: A Traveling Exhibit of First Nations And Inuit Art.; Cannery Days: A Chapter In The Lives Of The Heiltsuk; Hereditary Chiefs Of Haida Gwaii; Attributed To Edenshaw: Identifying The Hand Of The Artist. MOA Cafe now open daily 10am-4pm throughout the summer. Call 822-5087.

BC SMILE

The British Columbia Seniors Medication Information Line (BC SMILE) is a free telephone hotline established to assist seniors, their families and caregivers with any medication-related questions including side effects, drug interactions, and the misuses of prescription and non-prescription drugs when it is not possible to direct such questions to their regular pharmacist or physician. Monday to Friday 10am-4pm. Call 822-1330 or e-mail smileubc@unixg.ubc.ca.

UBC Weight Loss Study

We are looking for overweight males/females between the ages of 20-45 to participate in a new research study using metabolic stimulants to promote weight loss. For more information, call Romolo 439-0453.

Parent-Child Relationship Study

Mattering To Children. Are you a parent of a child who is still in school? Would you like to help me understand how parents know that they are important? I am conducting a survey of parents' understanding of how they know they matter to their children. You can complete the survey in your own home and return your responses by pre-paid mail. Call Sheila Marshall 822-5672.

Chan Centre Summer Tours

Tours are now running Monday to Friday daily at 11:30 am at the Chan Centre for the Performing Arts at UBC (across from the Museum of Anthropology). Meet us in the lobby for a half-hour of UBC's newest performing arts "gem". To book special tours call 822-2697.

Fetal Alcohol Syndrome Conference

Finding Common Ground: Working Together For The Future. Fetal Alcohol Syndrome and Neonatal Abstinence Syndrome Conference from Nov. 19-21 at the Coast Plaza Suite Hotel at Stanley Park. E-mail: elaine@cehs.ubc.ca or call Elaine Liao 822-4965.

Community Sport Summer Programs

UBC Community Sport Services programs provide a unique experience for the development of participants of all ages. It provides qualified instructors, a positive atmosphere, variety of facilities, and offers an enjoyable and meaningful experience for all participants. E-mail: fairplay@unixg.ubc.ca or call 822-3688.

UBC Fencing Club

UBC Fencing Club meets every Wednesday and Friday at 7pm in Osborne Gym A. Learn decision-making, poise and control. Newcomers welcome. Drop-in fee. Leave message at 878-7060.

Intercultural Studies

UBC Certificate in Intercultural Studies Summer Institute offers a creative week of focused skills development that combines face-to-face workshops with on-line coaching. August 17-21. Website: <http://itrc.cstudies.ubc.ca/summer> or call 822-1437.

Art Exhibition

Recent acquisitions to the UBC Photography Collection. Many artists are UBC staff and instructors internationally renowned for their work. Morris and Helen Belkin Art Gallery Tues.-Fri. 10am-12noon; Sat-Sun 12-5noon. Continues to Sep. 27. UBC staff, faculty and students free with valid ID. Call 822-2759.

Cut Flower Sale

Cut-cash-carry at wholesale prices. Snapdragons, zinnias and ageratum, 7/\$1. Spray carnations/asters, 3/\$1. Every Friday, 8am-1pm. Horticultural Greenhouse, West Mall and Stores Rd. Call 822-3283.

Women's Nutrition Study

Women between the ages of 19-45 required for a study examining nutrition attitudes and practices. Involves a questionnaire and interview. Will receive a gift certificate for the Bread Garden or Starbucks. Call Terri at 209-3281.

Peer Program Recruitment For Canadian Peers.

We are currently recruiting UBC Canadian students for the 1998-99 Peer Program. The program runs from September 1998 to April 1999. Apply today. Help an international student. Call 822-1265.

Statistical Consulting And Research Lab (SCARL)

SCARL offers long- or short-term statistical and analytical assistance to UBC researchers. Resources include expertise in many areas of statistical methodology and a variety of statistical software. Website: www.stat.ubc.ca/~scarl, e-mail: scarl@stat.ubc.ca or call 822-4037.

Engineering Day Camp For Kids

GEERing Up! UBC Engineering For Kids, CEME 2206 from 9am-4pm. Week-long, continues to Aug. 28. \$125/week for children entering Grade 2 to leaving Grade 7. Call 822-2858.

Hong Kong Women

Young women who are members of Hong Kong astronaut (parents in Hong Kong and children in Canada) or Hong Kong immigrant families (parents and children in Canada) are required for a study examining their personal and family decisions. Call Kimi Tanaka 254-4158 or Dr. Phyllis Johnson 822-4300.

Psychology Research

Dr. Johnston's UBC Psychology Lab is looking for 5-12 year olds for research on the ways younger and older children respond to questions about cartoons and stories with different answer choices. Call 822-9037.

UBC School of Nursing Second Fall Institute

Program Evaluation. Institute leader, Assoc. Prof. Ann Hilton. Sept. 26, Oct. 17, Nov. 7 and Dec. 5, 9am-4pm. Registration \$325 (before Aug. 22), \$375 (after Aug. 22). Student (with ID) \$195 (before Aug. 22), \$245 (after Aug. 22). Registration fee includes packet of selected readings and other materials. Call Edna at 822-7453 for registration forms.

UBC Glaucoma Clinic Volunteers Needed

The UBC Glaucoma Clinic at the Eye Care Centre is looking for volunteers to participate in eye research which will help improve the diagnosis and treatment of glaucoma. Prefer volunteers over 45 who have no known glaucoma. Examination is free, confidential, safe, painless and takes 90 minutes. Call 875-4111, ext. 61737 (Monday-Wednesday) or pager 205-0770 (Monday-Saturday).

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that'll
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UBC REPORTS

CALENDAR POLICY AND DEADLINES

The UBC Reports Calendar lists university-related or university-sponsored events on campus and off campus within the Lower Mainland.

Calendar items must be submitted on forms available from the UBC Public Affairs Office, 310-6251 Cecil Green Park Road, Vancouver B.C., V6T 1Z1. Phone: 822-3131. Fax: 822-2684. An electronic form is available on the UBC Reports Web page at <http://www.publicaffairs.ubc.ca>. Please limit to 35 words. Submissions for the Calendar's Notices section may be limited due to space.

Deadline for the September 3 issue of UBC Reports — which covers the period August 16 to September 5 — is noon, August 24.





THE UNIVERSITY OF BRITISH COLUMBIA

ENVIRONMENTAL PROGRAMS

ANNUAL REPORT 1997

Following is an annotated version of Environmental Programs Annual Report 1997. For a copy of the full report or for additional details please contact the Manager, Environmental Programs at 822-9527.

Executive Summary

The strategic focus for Environmental Programs in 1997 was centered on developing the existing programs into an overall environmental management system (EMS) for the University. The completion of the EMS review, initiated in 1996, identified key steps to be taken to achieve this goal.

The University significantly strengthened its commitment to the environment by approving and funding the development of several key programs identified by the EMS review including:

- expansion of the existing Environmental Compliance Audit Program;
- initiation of stage II of the Storage Tank Management Program; and
- development of a comprehensive Emergency Preparedness Program.

Environmental audits are an integral part of an environmental management system and are relied upon globally to identify areas of non-compliance, potential environmental impacts and environmental liabilities. In addition, environmental audits are relied upon to monitor and measure an organization's effectiveness at addressing these issues. Expansion of the audit program significantly enhances the University's ability to proactively address environmental issues.

The development of a comprehensive Emergency Preparedness Program underlines that UBC is committed to its obligation to the University Community to integrate a safe, healthy and environmentally responsible culture into the working and learning experience at UBC.

In addition, the development of an Environmental Legislation Handbook, procedures relating to environmental related Sites Legislation and the expansion of environmental awareness initiatives further contributed to the development of the EMS.

Several important environmental projects were conducted in 1997, at no cost to the University, through the BC Ministry of Environment, Lands and Parks "Environmental Youth Team Program". By providing training, supervision and sponsorship of these projects, invaluable work experience was provided to several recent UBC graduates.

The Environmental Services Facility, continued to provide efficient and innovative solutions for UBC's hazardous waste and are leaders in this area. In 1997, 90 tonnes of hazardous waste was processed by the facility.

Mission and Commitment

Mission

The major focus of environmental programs is to implement policy #6, Environmental Protection Compliance.

"UBC will act responsibly and demonstrate 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."

Approved January 1994

Affirmatively, the Mission of the department of Health, Safety and Environment for 1994 - 1997 was:

"To lead the development and implementation of health, safety and environmental programs for the University Community."

To this end, the goals in 1997 for environmental programs were:

- To assist the University in complying with environmental regulations.
- To lead the development and implementation of the University environmental programs, policies and procedures.
- To ensure the University Community has access to required training in environmental programs, policies and procedures.

To achieve these goals, Environmental Programs set the following five objectives for 1997:

1. Expand the Environmental Compliance Audit Program and implement a three year plan.
2. Conduct an emergency scenario and table top exercise, and develop a plan for an Emergency Preparedness Program at UBC.
3. Ensure that UBC operations are in compliance with all applicable legislation.
4. Conduct an environmental legal review and distribute an Environmental Legislation Handbook to all Administrative Heads of Unit.
5. Develop and implement a plan to respond to the recommendations from the Environmental Management System Review.

UBC's Commitment To The Environment

In 1997 the University expanded its environmental commitment by approving the expansion of the Environmental Compliance Auditing Program. The addition of two audit staff to the existing program and an allocation of resources to conduct testing and analysis as part of the audit process have enhanced the program significantly. A three year plan has been initiated to conduct audits of all high, medium and low risk activities at the University. In addition, stage II of the storage tank management program was allocated funds by Land and Building Services.

The University also allocated resources to the development of a comprehensive emergency preparedness program at UBC, which includes the development of a disaster plan.

To further emphasize the University's commitment in this area UBC President, Martha Piper, endorsed the Environmental Protection Compliance Policy (Policy #6), by signing a Policy document which will be re-produced as a poster and widely distributed across campus in 1998.



President Martha Piper signing Policy #6, Environmental Protection Compliance

Environmental Programs Activities

Environmental Management System

An environmental management system (EMS) is part of an overall management system that addresses the immediate and long term impact that an organization's products, services and operations have on the environment.

An effective EMS can enable an organization to:

- anticipate and meet growing environmental expectations,
- ensure ongoing compliance with local, national and international requirements,
- realize cost savings,
- reduce environmental liability, and
- demonstrate due diligence.

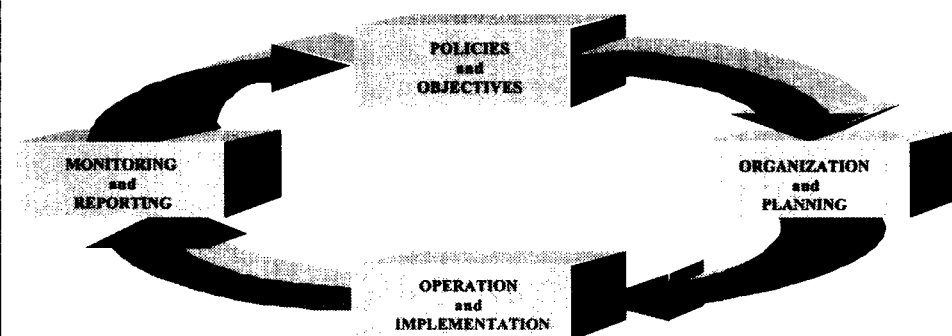


Figure 1 — Environmental Management System Framework

Since the expansion of Occupational Health and Safety in 1994 to incorporate Environmental Programs, several initiatives towards establishing an EMS for the University have been undertaken. Activities in 1997 included:

- an expanded compliance audit plan, approved in November
 - development and approval of a comprehensive emergency preparedness program
 - development of an Environmental Responsibilities Seminar, for Deans, Directors and Administrative Heads of Unit
- and several initiatives mentioned below.

Environmental Management System Review

The external review conducted in 1996 by Deloitte and Touche was formally completed in 1997 and the report produced by the Steering Committee was presented to the Board of Governors on December 11, 1997. The review contained several recommendations which are being implemented as part of the EMS.

Environmental Legislation Handbook

To assist Administrative Heads of Unit in ensuring their units are compliant with legislation, Environmental Programs and Academic and Legal Affairs prepared the *Environmental Legislation Handbook*.



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The handbook is a compilation of legislation that is potentially applicable to operations and activities at the University. Included in the handbook are brief outlines of the predominant Acts in Canada and resources for obtaining copies of applicable Acts and Regulations.

Procedures Relating to the Contaminated Sites Legislation

Legislation pursuant to contaminated sites, which consists of the Provincial Waste Management Amendment Act (1993) and the Contaminated Site Regulation (BC. Reg. 269/65) became law on April 1, 1997.

The legislation creates a comprehensive framework for the assessment and remediation of contaminated sites and the liability for such sites which is absolute, retroactive and joint and several. To ensure that the University's environmental obligations are met, procedures were developed and implemented to ensure compliance and minimize liability.

Activities at UBC that are potentially affected include:

- development projects,
- sale, release, purchase or acquisition of property, and
- lease and other contracts relating to lands and buildings.

Reporting on Environmental Issues to the University Board of Governors

Environmental reports were presented to the University Board of Governors at the February, July and December meetings.

Benchmarking of the EMS

An annual comparison of a component of the University EMS with other institutions has been implemented. In 1997 hazardous waste management operations at UBC were compared with those at three other Canadian universities.

The highest percentage of hazardous waste treated or recycled at the comparison institutions was 10%. At UBC (based upon 1996 figures) it is 30%. The calculated relative costs per kilogram of hazardous waste for the three comparison institutions were \$6.90, \$5.40 and \$3.60. The same relative cost at UBC is \$1.80.

The efficiency and cost effectiveness of the UBC operation is due to several factors including:

- a focus on alternative methods for the wastes other than disposal, these include innovative treatment and recovery operations and exchange programs,
- the ability to incinerate the majority of biohazardous waste which reduces the cost of waste disposal, and
- the highly competitive waste disposal business in British Columbia resulting in reduced costs.

Environmental Programs Advisory Committee

The Environmental Programs Advisory Committee met twice in 1997. In addition to reviewing overall program activities the committee were involved in developing proposals to expand the environmental compliance audit program.

Environmental Training and Awareness

President's Environmental Award for 1997

Jim Carruthers of Campus Planning and Development received the President's Environmental Award for 1997. The award recognizes UBC employees who have made exceptional contributions to environmental awareness and protection efforts. Carruthers, a development planner, helped develop procedures to assess potential environmental contamination in sites owned by the University. In addition, he ensures that the procedures related to development projects are followed. He is the third recipient of this annual award. Previous recipients were Diana Hastings from Wood Science (1996), and Pat Harrison, formerly of the Botany Department (1995).

Environmental Programs Merit Award

Adrienne Vair was presented with an Environmental Programs Merit Award. The merit award recognizes UBC employees who have made consistent efforts to promote and support the University's environmental efforts. This was the first year that this award was presented. Vair, who worked in the histopathology laboratory at Vancouver Hospital Health Sciences Centre's UBC site, participated in the Solvent Recovery Program since 1994.

Waste Watchers Environmental Newsletter

Four issues of Waste Watchers were published in 1997. The newsletter, designed to increase awareness regarding environmental issues, is distributed quarterly to approximately 600 people.

Environmental Programs Web Page

The Environmental Programs web page at www.safety.ubc.ca/envprog/env.html has been significantly revised and updated. Information currently available includes:

- all hazardous waste disposal procedures,
- emergency planning information,
- substance assessment fact sheets,
- Waste Watchers newsletters,
- chemicals available through the chemical exchange program, and
- photochemical and solvent recovery program information.

Environmental Responsibilities at UBC

The Environmental Responsibilities seminar in 1997 focused exclusively on responsibilities of Deans, Directors, Department and Administrative Heads of Unit. The two hour session was organized by Environmental Programs and Academic and Legal Affairs. It was attended by 29 people representing the following units:

- Continuing Studies
- Plant Operations
- Architecture
- Law
- Animal Sciences
- Maple Ridge Research Forest
- Institute for Resources and the Environment
- Food Services
- Pharmaceutical Science

- English
- Student Services
- Animal Care
- Civil Engineering
- Biochemistry
- Science One
- Purchasing
- Housing
- Science
- Pharmacology /Therapeutics
- Agricultural Sciences
- School of Library Archival
- Dentistry
- O.T Div. Sch. Rehabilitation
- Health Safety & Environment
- Parking & Trans./Campus Security

Hazardous Waste Management

As part of the Department of Health, Safety & Environment, Chemical Safety & Biosafety courses, sections devoted to hazardous waste management are presented by Environmental Programs staff. In 1997 approximately 1800 people attended these courses. In addition, specific departmental courses are conducted by request.

Pollution Prevention Workshop

The first workshop on pollution prevention was conducted in 1997. The workshop focused on laboratory methods that can be utilized to reduce the amount of hazardous waste generated. Seventeen people attended the workshop in 1997.

Emergency and Earthquake Preparedness

Presentations on Emergency and Earthquake Preparedness were given to several groups in 1997 including; the University Health and Safety Committee, the Old Administration Local Safety Committee and Health, Safety & Environment. Emergency procedures training was also provided by Environmental Programs through the Chemical Safety Course.

In addition, two screenings of the video "Academic Aftershocks", which describes the Northridge earthquake in July 1995, were organized and twelve other groups or departments requested the video to show Faculty and Staff. Approximately 1000 "Are You Ready For An Earthquake On Campus?" brochures, produced by Health, Safety & Environment, were distributed to Faculty, Staff and Students.

Work Experience for Students and Recent Graduates

In 1997 Environmental Programs employed four work study students to undertake a number of environmental projects.

In addition, Environmental Programs sponsored three projects under the BC Ministry of Environment's Environmental Youth Team Program. These projects provided valuable work experience for three recent UBC graduates.

Regulatory Compliance

Environmental Programs were involved in several regulatory compliance related issues in 1997 that are outlined below.

Oyster River Compost Facility

A compost facility operated by the Pacific-Bio Waste Recovery Society on University owned property at Oyster River, Vancouver Island, was the subject of a BC Ministry of Environment investigation in late 1996. The facility was deemed to have been in violation of its Waste Management Permit. The Ministry did not proceed with charges as the operators promptly addressed the violation.

In response to the investigation and Ministry recommendations the University took the following action:

- Environmental Programs met with the Ministry and conducted an environmental audit following the meeting,
- an action plan was developed by the facility operators for addressing the items outlined in the audit report, and
- communication between Academic and Legal Affairs and the Ministry concerning the University being named as a co-holder of the facility permit.

Materials Handling Facility

In March, the Greater Vancouver Regional District (GVRD) inspected the Plant Operations Materials Handling Facility located at 6055 Nurseries Road (South Campus). While no operating issues were identified at the meeting, the GVRD subsequently notified the University that the facility must be permitted under the Greater Vancouver Sewerage and Drainage District Municipal Solid Waste and Recyclable Material Regulatory Bylaw No. 181 and amendment Bylaw No. 183.

Pathological Incinerator

The pathological incinerator at the Environmental Services Facility, located at 6025 Nurseries Road (South Campus), underwent air emission testing in August in compliance with permit requirements. The incinerator met the testing criteria for particulates but failed to meet the criteria for flow rate and hydrogen chloride. The flow rate result, however, was within 10% of the permitted criteria and was deemed to be acceptable. The primary reason for failure was deemed to be due to an inaccurate test method. The air emission testing was repeated in November using a more appropriate testing method approved by the GVRD and the incinerator met all criteria.

Storage of Polychlorinated Biphenyls

The University has permitted storage at the Environmental Services Facility for polychlorinated biphenyls (PCB's) and has been collecting PCB containing materials at a rate of approximately 5000 kg per year. These materials primarily consist of electrical light ballasts that are being replaced on campus. The University requested an amendment to the existing permit to allow for increased storage of these materials.

Sewer Disposal at the Animal Care Centre

The Animal Care Centre disposes of animal bedding and waste food products to the sanitary sewer system. In January 1996, the GVRD advised the University that disposal of these materials may be in contravention of the GVRD Sewer Use Bylaw No. 167 and requested that the University "find an alternate means of disposal for this type of material". The University is actively working with the GVRD and an environmental consultant to address the issues.



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Reportable Spills

The University again had no reportable spills (as defined under the *Spill Reporting Regulation*, BC Reg. No. 263/90) in 1997. There were three reportable spills in 1995 and none in 1996.

Environmental Services Facility (ESF)

In 1997, the Environmental Services Facility remained focussed on reducing the amount of hazardous waste requiring disposal. To this end, successes have been achieved in increasing the amount of chemicals recycled and the amount of treatments performed to reduce or eliminate hazardous waste.

Hazardous Waste Treatment

Hazardous waste treatment at the facility consists of a number of activities described below.

Solvent Recovery

The 4400 liters of solvent recovered by the facility in 1997 is a 3.5% increase from the 4255 liters in 1996. The overall increase in 1997 volumes can be accounted for by a growing demand for recycled acetone and methanol and by the addition of the solvent Varsol to the program.

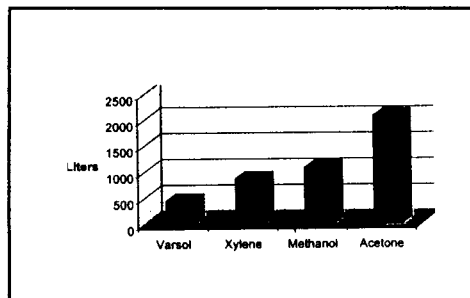


Figure 2 - Volumes of solvent processed at the Environmental Services Facility in 1997.

Incinerated Waste

The amount of material incinerated in 1997 experienced slight decreases from 1996 in all waste categories (see Figure 3).

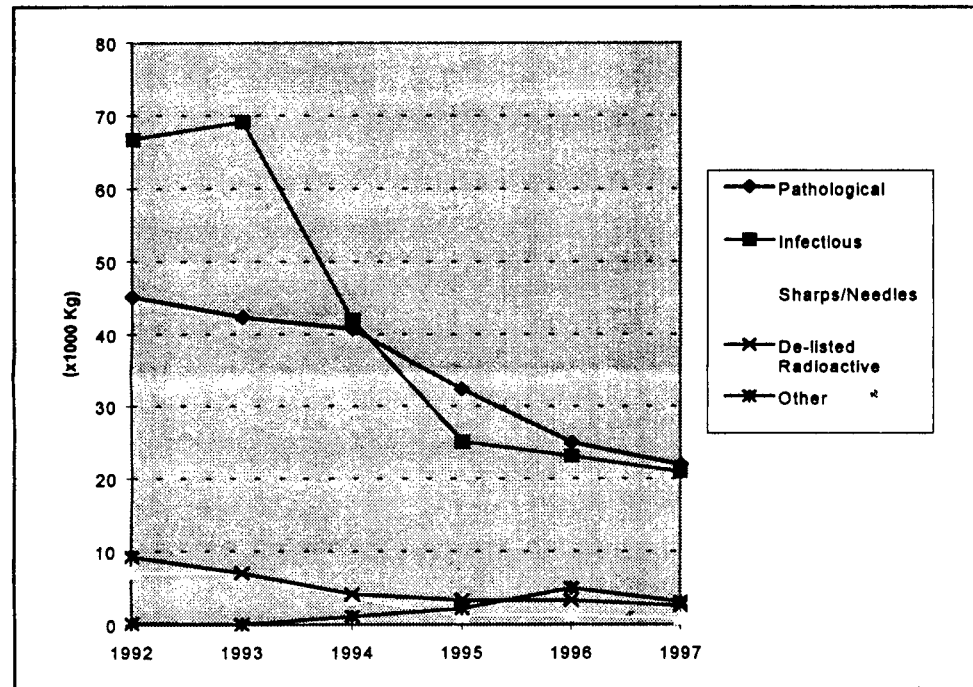


Figure 3 - Trends in the amount of incinerated materials processed since 1992.

Figure 3 also indicates that since 1992 the volumes of waste incinerated at UBC have been decreasing. In each of the last 5 years there has been a decrease in the amount of waste requiring incineration. This reduction is due to the diversion of waste to other disposal routes and waste minimization efforts. Reduction of incinerated waste allows facility staff to concentrate more on pollution prevention programs and on-site waste treatment, ultimately reducing environmental impacts and disposal costs.

Table 1 below lists the volumes of waste received for incineration per generator in each waste category.

Category	UBC	UVIC	SFU	OTHER	TOTAL (kg)
Pathological	15784	0	1699	4233	21716
Infectious Autoclaved	20877	36	0	402	21315
Sharps/Needles	820	0	64	32	916
De-listed Radioactive	2410	0	0	255	2665
Other	1954	1149	0	87	3189
Total	41845	1185	1763	5009	49801

Table 1 - Waste incinerated in 1997 (kg)

Overall, the amount of waste incinerated decreased from 57,868 kg in 1996 to 49,801 kg in 1997. The following notable changes in volumes may be attributed to the 14 % decrease.

- 4,000 kg less pathological waste from UBC generators. This is a result of a changes in research practices.
- 1,000 kg less of "Other" waste from UBC. This category includes paint rags, or solidified ethidium bromide gels and is a result of improved segregation and treatment of material.
- 700 kg less of "De-listed Radioactive Waste" from SFU, due to the sourcing of alternate disposal procedures.
- ~2,000 kg less of "Infectious Autoclaved" waste. This is due to the reduction at source of noninfectious laboratory supplies that were previously combined with "Infectious Autoclaved" waste and reduced use of these products in laboratories.

Research and Development

Procedures are currently being researched for the treatment of heavy metals and cyanides in solution. The objective of heavy metals treatment is to remove metals in solution through precipitation, such that the resulting solution is suitable for discharge to the sewer system and the separated precipitate is suitable for landfill. Cyanide treatments being investigated involve the chemical or biological degradation of the cyanide molecule resulting in non-hazardous byproducts. These waste streams accounted for approximately 2800 liters (~14 drums) of hazardous waste in 1997, with an estimated \$7000 associated disposal cost. The current methods being researched are expected to result in a 75 % saving of the disposal cost for this waste stream.

Hazardous Waste Storage and Off-Site Disposal

The amount of waste received at the facility in 1997 is shown in table 2. A detailed explanation of the figures is provided in the full report, which is available for the Department of Health, Safety & Environment.

Chemical Conservation Program

The Chemical Conservation Program was introduced this year as a collective program name that combines all chemical recycling/reuse and pollution prevention initiatives available to waste generators who use the Environmental Services Facility. The consolidation of all activities into one program will help to simplify to users the services offered and the goal of the program. Current programs include:

- Recovered Solvent Distribution,
- Chemical Exchange,
- Silver Recovery,
- Pollution Prevention Workshop, and
- Waste Watchers Newsletter.

Recovered Solvent Distribution

The volume of re-distilled solvents distributed back to waste generators increased by 39% to 1424L as a result of increased participation in the program and in part to the recent addition of Varsol to the list of products offered.

The distribution of acetone increased significantly compared to 1996, but levels of xylene and methanol remained relatively the same. The increased demand for recycled acetone reflects UBC's interest and willingness to reduce the quantity of hazardous solvent that is disposed of through waste contractors.

Chemical Exchange

The quantity of chemicals exchanged this year decreased from the previous year due to the 6 month absence of the technician administering the program. Approximately 200 kg of chemicals were exchanged in 1997.

Improvements to this program have been made in an attempt to increase the exposure of the program amongst the UBC labs. These changes include:

- distribution of inventory lists through the Waste Watchers Newsletter,
- up-to-date inventory lists available through the WEB-Page, and
- monthly releases of inventory lists to waste generators.

Silver Recovery Program

The silver collected from the treatment process is sold to a refinery for reuse. Approximately \$600 is expected this year from the silver recovered from waste solutions. These funds are applied towards general hazardous waste disposal costs at the facility.

Waste Type	Amount		
	1996	1997	% Diff.
Batteries	1,100 kg	2,255 kg	105
Corrosive Liquids	1,938 L	1,327 L	-32
Corrosive Solids	118 kg	372 kg	215
De-listed Radioactive	3,422 kg	2,665 kg	-22
Hazardous Chemicals	1,356 kg	5,220 kg	285
Infectious Autoclaved/Decontaminated	23,185 kg	24,139 kg	4
PCB Waste	7,720 kg	4,317 kg	-44
Paint	N/A	1,976 L	N/A
Pathological	24,975 kg	21,716 kg	-13
Photochemical Waste	4,553 kg	5,233 kg	13
Potentially Explosive Materials	0kg	5.2 L	N/A
		1.81 kg	
Segregated Biomedical	499 kg	2,386 kg	378
Sharps/Needles	1,297 kg	916 kg	-30
Solvent - Chlorinated	9,993 L	7,563 L	-24
Solvent - Non-Chlorinated	16,520 L	11,800 L	-29
Solvent - Varsol	N/A	330 L	N/A
Waste Oil	1,400 L	7,590 L	442
TOTAL	63,672 kg	63,988 kg	0.5
	29851 L	30,591 L	2.5

Table 2 - Type and amount of material handled at the Environmental Services Facility in 1997.

Environmental Compliance Audits

The environmental compliance audit program is an integral part of the University's Environmental Management System. As mandated by the policy #6 (Environmental Protection Compliance), the audit program is responsible for examining all UBC activities for compliance with environmental legislation, UBC policies and procedures, and best management practices. There are currently two main components



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to the audit program: the department/site audits and storage tank audits.

During 1997, a three year plan to audit all sites of high, medium and low risk activity at the University was approved. Several audits were conducted throughout the year and audit protocols were revised to adequately reflect changes in environmental statutes. A standardized report format and associated templates were also developed.

Environmental Compliance Audit Process

An environmental audit consists of several steps illustrated in figure 4. Feedback is received during the audit process and has thus far been positive. One example from a Department Head includes the following:

"...I also appreciate the fact that my own personal dedication to environmental causes has been noted, and am grateful that the general environmental information made available to me by you in the context of potential environmental problems within the department has enabled me to undertake the kind of improvements which are still possible, even in a low-risk department.

...this audit has been very helpful in focussing attention on these various problems...It was also very useful to me personally to make me further aware of my responsibilities with regard to the environment...

The audit was carried out in a thoroughly professional manner, and in all aspects a positive experience."

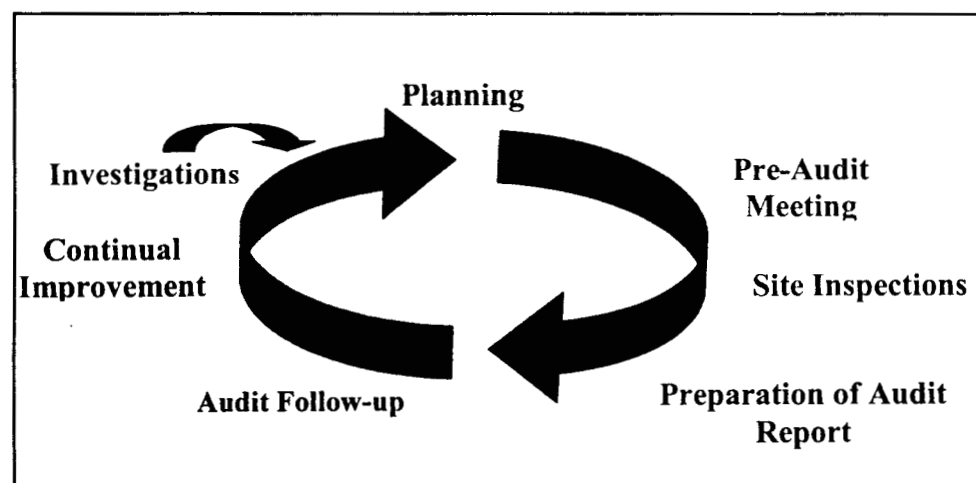


Figure 4 - The environmental compliance audit process.

The University activities and departments are divided into four risk categories:

- Class 1 = High risk
- Class 2 = Medium risk
- Class 3 = Low risk
- Class 4 = Very low risk

Departments and sites are assigned to one of these risk categories depending on the likelihood of (a) hazardous materials being used or stored, and / or (b) the department/site engaging in environmentally regulated activities. Storage tanks are also assigned to these four categories depending on their content, size, location, and age. The risk assessments are confirmed during the audit and adjusted if necessary.

Department/Site Audits Conducted

The number of departments/sites audited to date is shown in table 3.

Department /Site Risk	Number identified	Total number audited to date	Number audited in 1997	% of Dept/Site audited to date
Class 1	62	10	5	16%
Class 2	43	1	0	2%
Class 3	43	1	0	2%
Class 4	225	18	12	8%
Total	373	30	17	8%

Table 3 - Total number of audit sites identified and audited to date.

As a result of the audit findings, recommendations were made which include formalizing and documenting all training, and ensuring that individuals are aware of their environmental responsibilities. Environmental Programs initiated development of two tools to aid departments in complying with these recommendations:

- a Personnel Safety & Environmental Orientation and Training Record, which outlines recommended training and can be used as a method of documenting the training, and
- a summary document outlining environmental responsibilities of both individuals and the University.

Storage Tanks Audited

In 1997, the Inventory of Permanent Hazardous Materials Containment Sites (storage tank inventory) was completed. The assessment was based on current Campus Planning and Development architectural / engineering drawings, as well as, information provided by on-site personnel. This database will continue to expand as new tanks are identified. A summary report of these tanks was provided to Campus Planning and Development, Plant Operations, Financial Services (for insurance purposes), and the Vancouver Fire & Rescue Services.

A storage tank audit tool was developed in 1997 using applicable legislation, codes of practices, and best management procedures. A total of 21 low risk storage tank audits have been completed. Common issues identified in the storage tank audits conducted thus far include:

- the need to formalize tank monitoring, and
- the need to develop storage tank contingency plans.

Environmental Site Assessments

In 1996 and early 1997 the University developed procedures in response to the Contaminated Sites Legislation. These procedures (UBC Procedures Relating To The Contaminated Sites Legislation) outline criteria for environmental site assessments for a variety of projects including specific development projects, leases, and property transactions. As a result of these procedures, environmental site assessments were conducted of the following areas:

- St. John's College
- New Creative Arts/Journalism
- Continuing Studies
- St. Marks Chapel
- Agassiz Research Farms
- Faculty Club
- Panhellenic House
- International House

None of the sites assessed were shown to be contaminated according to criteria under the Contaminated Sites Regulation.

Emergency Preparedness

The University's ability to respond to emergencies or disasters in the future has been significantly increased due to the approval of a four phase plan to create a comprehensive emergency preparedness program. The program, along with existing activities, is described below.

Emergency Preparedness Program

The program consists of a three development phases over three years and a fourth on-going testing and exercising phase. These phases are described below.

Phase	Key Elements
Phase I (year 0 - 1.5)	<ul style="list-style-type: none"> • Establish an Emergency Preparedness Steering Committee and related sub-committee, hire emergency planner (1FTE) • Develop emergency policy • Identify hazards, conduct risk assessment and develop a disaster plan • Identify resources and key personnel required for Emergency Operations Center
Phase II (year 1.5 - 2.5)	<ul style="list-style-type: none"> • Implement phase I findings, develop departmental emergency plans • Train key personnel and University community • Test disaster plan
Phase III (year 2.5 - 3)	<ul style="list-style-type: none"> • Develop recovery strategies for the University • Review and approve departmental emergency plans
Phase IV (year 3 +)	<ul style="list-style-type: none"> • On-going training of key personnel and the University community • Testing of the plan • Review of departmental plans • Revision of program elements • Emergency planner reduced to 50% (0.5 FTE)

Table 4 - The four phases of the Emergency Preparedness Program

Emergency Scenario - Operation Equinox

In June of 1997, the Department of Health, Safety and Environment (HSE) conducted the fifth annual emergency response scenario on the UBC campus. These events are used to test and evaluate protocols and procedures used during an emergency response. Program elements that are operating smoothly are identified as are opportunities for specific system improvements. This exercise was designed to test:

- inter-agency communication,
- hazardous materials response protocols at UBC,
- the incident command system and interagency involvement, and
- implementation of the evacuation procedure for the Vancouver Hospital - UBC site.

As in previous years, the exercise reinforced the necessity of an emergency communication system for the University, since no such communication system is currently in place. The lack of a permanent communication system, including radios and a unique emergency frequency, can seriously compromise UBC's ability to effectively respond in the event of a large scale emergency or disaster. The scenario also confirmed that there is an effective response to hazardous materials on campus. The response during this exercise, as well as the interactions between the response agencies, far exceeded that in earlier years.

Agencies involved included HSE, Parking and Transportation / Campus Security, Public Affairs, BC Ambulance Service, RCMP, Vancouver Hospital - UBC Site, Vancouver Fire and Rescue Services. Approximately 60 people participated in this event.

Each year there has been a significant improvement in the overall emergency response at the University. This arises not only from developing competence in specific functional areas, but also from the improving interaction between the various response agencies and from an understanding of each others' roles and procedures on the University campus.

Tabletop Scenario

The first tabletop scenario was conducted in 1997 by Environmental Programs. In a tabletop exercise, representatives from emergency agencies meet around a table to discuss their response to a particular scenario. Reaction times are not critical; the primary benefit of this exercise was to examine interagency interaction and response. The 1997 tabletop simulated an explosion at the Environmental Services Facility.

Emergency Procedures and Information Handbook

A work study position was created in fall 1997 to develop an emergency procedures and information handbook. The desk size flip chart will contain emergency information and was completed and distributed to faculty and staff in 1998.

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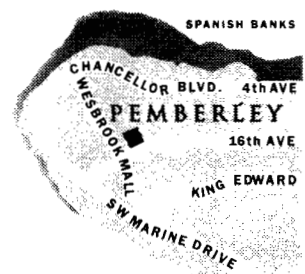
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News Digest

The School of Audiology and Speech Sciences, within the Faculty of Medicine, has received an endowment of \$75,000 from the Rotary Club of Vancouver in memory of Rotarian Syd Welsh.

The donation will support research and teaching activities in Prof. David Stapell's Human Auditory Physiology Laboratory (HAPLAB). Studies include assessments of hearing in infants and children and investigation of the brain processes underlying the perception of sound.

Welsh had a personal interest in hearing issues. The Rotary Club of Vancouver has chosen hearing as its special field of interest and will also make two annual awards of \$750 each to practicum students in Audiology.

The Rotary Club/Syd Welsh Endowment Fund will be matched with UBC funding.

•••••

The committee from the Faculty of Arts judging this year's UBC Essay Competition in English had a difficult time picking a winner so they gave the top prize to three high school students. The subject was "competition."

First place went to Meaghan Buckley-Pearson of Magee Secondary in Vancouver, Barbara Moss of Prince of Wales Secondary and Chandra Murdock of Vancouver Technical Secondary.

In awarding each student the top \$1,000 essay prize, the committee ranked them as equal, saying each showed some real strengths. Twenty-two other high school students received a distinguished performance rating along with a \$50 UBC Bookstore gift certificate. Eight others got honorable mentions.

More than 2,400 Grade 12 English students at 121 schools throughout B.C. submitted entries. The students had three hours to compose their essays.

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The classified advertising rate is \$16.50 for 35 words or less. Each additional word is 50 cents. Rate includes GST. Ads must be submitted in writing 10 days before publication date to the UBC Public Affairs Office, 310 - 6251 Cecil Green Park Road, Vancouver B.C., V6T 1Z1, accompanied by payment in cash, cheque (made out to UBC Reports) or internal requisition. Advertising enquiries: 822-3131.

The deadline for the September 3 issue of UBC Reports is noon, August 24.

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Tusk Master

Inuit artist Jobie Arnaituk's work, Walrus Composition, combines fossilized walrus skull, caribou antler and soapstone to capture the sense of power and strength of one of the Arctic's most powerful creatures. It is one of the many works of contemporary Canadian and Inuit artists in the international travelling exhibition Transitions, which continues at the Museum of Anthropology to Jan. 3, 1999.

People

by staff writers

A recent survey of academic journals has ranked **Izak Benbasat** of the Faculty of Commerce and Business Administration as the world's sixth most prolific academic in the field of management information systems.

The survey ranked individual researchers by the number of articles published in leading academic journals in management information systems during the period 1991-1996.

Benbasat is Canfor Corporation Professor of Management Information Systems, associate dean, Faculty Development, and winner of a 1998 Killam Research Prize.

•••••

The British Columbia Library Association has given an Honorary Life Membership Award to **Suzanne Dodson**, UBC Library's facilities and preservation manager.

Dodson was recognized for playing a leading role in a 20-year campaign to secure the free deposit of provincial government publications for academic libraries.

Dodson was also honoured for an award-winning program of preserving microfilm of historical materials.

The award is given to those who have made substantial long-standing contributions to the association and to library service in British Columbia.



Dodson

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Rudolf Vrba, an associate professor emeritus in the Faculty of Medicine, has been awarded an honorary degree from the University of Haifa in recognition of his academic and public activities.

Vrba was a prisoner of Auschwitz concentration camp from 1942 until his escape in April 1944. He then co-authored a report on the camp, the *Vrba-Wetzler Report* or *Auschwitz Protocols*, which has become part of the history of the Holocaust.

He has also helped produce six films relevant to Holocaust history and has published a book, translated into five languages, of personal recollections of Auschwitz.

A faculty member in the Dept. of Pharmacology and Therapeutics from 1967 to 1990, Vrba is known for his research on the chemistry of the brain and his studies relevant to diabetes and cancer.



THE UNIVERSITY OF BRITISH COLUMBIA

Centre for International Health Office of the Co-ordinator of Health Sciences Director

Applications are invited from current UBC faculty members for the position of Director, Centre for International Health, Office of the Coordinator of Health Sciences. This appointment is for a term of five years, commencing September 1, 1998 or as soon thereafter as a suitable candidate is found.

The Office of the Coordinator of Health Sciences develops and maintains effective collaboration, interdisciplinary understanding, and shared communication between the health sciences, between the health programs and other units of the University, and between the external community and the University. The OCHS has an identity and set of functions that transcend the individual faculties, schools and departments.

The Director of the Centre will be responsible for: creating an institutional base from which UBC can offer leadership in international health theory, research, education and practice; facilitating linkage and interaction between the University and other public and private, domestic and overseas organizations involved in international health; and forming linkages with other UBC Centres and units concerned with global issues.

Qualifications for the position include distinction in teaching and research in a field relevant to international health, demonstrated administrative ability, and proven experience in mounting international/global health initiatives.

Applications (including a letter of application, a current CV and the names of three references) will be received until August 31, 1998 and should be directed to:

Dr. John H.V. Gilbert
Coordinator of Health Sciences
University of British Columbia
400 - 2194 Health Sciences Mall
Vancouver, B.C. V6T 1Z3
Tel: 604-822-5571 Fax: 604-822-2495
E-mail: johnhvg@unixg.ubc.ca

UBC hires on the basis of merit and is committed to employment equity.

We encourage all qualified persons to apply.

UBC Press books win awards

This year is shaping up to be an outstanding one for UBC Press with six awards for its publications in as many months.

Sinews of Survival: The Living Legacy of Inuit Clothing by Betty Kobayashi Issenman has won the 1998 Millia Davenport Award from the American Costume Society. The judges rated the Montreal author's work as the most important book of the year.

Death So Noble: Memory, Meaning, and the First World War by Jonathan Vance has been awarded the Sir John A. MacDonald Prize, the Canadian Historical Association's (CHA) most prestigious award.

UBC Geography Prof. Cole Harris was awarded the CHA's Clio Award for B.C. for his book *The Resettlement of British Columbia: Essays on Colonialism and Geographical Change*.

The Clio Award for the Prairie region went to *As Their Natural Resources Fail: Native Peoples and the Economic History of Northern Manitoba, 1870 - 1930*, by Frank Tough.

The distinction "outstanding book" goes to *Tammarniit (Mistakes): Inuit Relocation in the Eastern Arctic, 1939-63* by UBC Social Work Assoc. Prof. Frank Tester and Peter Kulchyski.

Trading Beyond the Mountains: The British Fur Trade on the Pacific, 1793 - 1843 by UBC alumnus Richard Somerset Mackie has won the 1997 Lieutenant Governor's Medal for Historical Writing. Mackie, a Victoria freelance historian, argues that the Hudson's Bay Company pioneered the concept of a Pacific Rim economy on Canada's West Coast.

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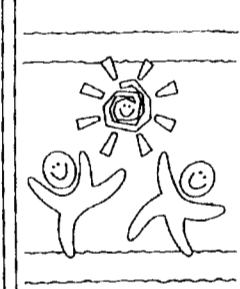
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Inner space man

Prof. Ron Clowes probes deep to understand Mother Earth

by Stephen Forgacs

Staff writer

When Ron Clowes speaks of Canadian history, he doesn't bring up the Riel Rebellion, Confederation, the Plains of Abraham, or anything else that happened within the last few millennia.

Instead, Clowes speaks of events that took place billions of years ago deep beneath the Earth's crust. These events led to the formation of mountain ranges taller than today's Himalayas, of canyons 10 times deeper than the Grand Canyon, and of massive oceans created and destroyed.

For the past 15 years, Clowes, a geophysicist and professor in UBC's Dept. of Earth and Ocean Sciences, has played a key role in leading-edge research into Canada's geological history.

As director of Lithoprobe, Canada's largest and longest-lived national earth sciences research project, Clowes has worked with hundreds of researchers in the geosciences from across the country and around the globe to build a profile, and understand the development, of the portion of the lithosphere that lies beneath Canada and its surrounding continental margins.

The lithosphere is Earth's relatively cold, strong and rigid outer shell, typically 100 kilometres or more thick but as thin as 30 kilometres and as thick as 300 kilometres in places.

Within the lithosphere is a global mosaic of plates, some of which hold continents, all moving relative to one another. As these plates collide over the course of billions of years, they can, and do, transform the planet.

The most immediate and noticeable effects of the slow movement of tectonic plates are the earthquakes that result as pressure building up between plates is suddenly and violently released, a none too subtle reminder that Earth is still a work in progress.

Lithoprobe came into being in the early 1980s following discussions among many earth scientists in Canada — geochemists, geophysicists, and geologists — of the need for a major, co-ordinated, multidisciplinary research project. The result of those discussions was Lithoprobe which, in 15 years, has more than met those early goals.

Research into the earthquake-prone Juan de Fuca plate off Vancouver Island initially brought Clowes into the Lithoprobe fold. In 1984, he and others launched the fledgling Lithoprobe's first major study of the Cascadia subduction zone, where the oceanic Juan de Fuca plate is thrust below the North American plate.

Thanks in part to the success of this study, Clowes found himself working on the proposal for funding of Lithoprobe's Phase II.

In 1987, he was named Lithoprobe director, responsible for the science and administering funding provided to the project by the Natural Sciences and Engineering Research Council (NSERC).

When the project — which recently received funding for a final phase of five years — concludes in 2003 after 20 years, NSERC, the Geological Survey of Canada (GSC), partners in industry,



Stephen Forgacs photo

Ron Clowes and other Lithoprobe researchers are exploring the Earth at depths much greater than those at which this "jellyroll" was found. The jellyroll, on display in the M. Y. Williams Geological Museum at UBC, was formed between 11,000 and 25,000 years ago of sediment in a lake dammed by glaciation. The jellyroll on display was cast from a mould made of the formation after it was exposed in a sand pit near Lytton, B.C. Lithoprobe is revealing events that occurred miles beneath the Earth's surface, many millions of years ago.

provincial geological surveys and numerous Canadian universities, will have channeled \$100 million toward the 10 major components or study areas across Canada that make up the project.

"The project has exceeded the expectations of the original proponents and certainly exceeded my expectations too," says Clowes. "No one could have envisaged that it would still be going in the year 2000, and with such strength."

Breakthroughs made during the course of the project are immense in physical size alone: a mountain range bigger than the Himalayas once towered across Ontario, Quebec and into Labrador; a massive rift, 30 kilometres deep, once existed where Lake Superior is now, before being filled in over tens of millions of years by lava and sediments; previously unknown structures as much as 20 kilometres high and 100 kilometres long lie deep beneath the surface of B.C. and central Alberta; and an ocean the size of the Pacific once lay in place of Saskatchewan and Manitoba, complete with island archipelagos similar to Indonesia and the Philippines.

In some areas, researchers met with astounding success. In the Northwest Territories they were able to generate, through seismic reflection, images of great clarity of the Earth's crust and into the lower part of the lithosphere below it.

"We have reflections at depths approaching 100 kilometres that we can follow for 300 kilometres laterally," marvels Clowes. "That's never been seen before."

Another surprise came in northern Quebec, just south of James Bay, where researchers detected evidence that plate tectonic processes were occurring some 700 to 800 million years earlier than had previously been documented.

"Previous studies had demonstrated that these tectonic processes occurred in the Paleoproterozoic, just under 1,900 million years ago, with the best example achieved in the Gulf of Bothnia between Sweden and Finland. The evidence collected in Quebec indicates movement 2,600 million years ago," he says.

Researchers have relied on a variety of techniques from geology, geophysics and geochemistry to build the detailed profile. Deep Earth images are generated largely with seismic reflection, in which sound energy generated by large "vibrois trucks" — likened to dancing elephants — is reflected vertically and provides a fuzzy image of rock types and structures. Seismic refraction, where energy released by deep explosions is measured as it reaches the surface great distances away from the source, and electromagnetic studies, which investigate the electrical conductivity of the subsurface, are also used.

Now, with the majority of the project components either complete or nearing completion, Clowes is able to paint a clear picture of the contributions the project has made not only scientifically, but also on a social and economic level.

"The legacy of Lithoprobe includes a data set which has no equal anywhere in the world," he says, describing the detailed mapping of Canada's deep-earth structures from coast to coast.

The project's legacy also includes new or refined technologies and techniques, such as the application of seismic reflection in the mining industry.

Although Lithoprobe met with openly voiced scepticism from some Canadian mining companies when it was getting underway, applications of seismic reflection have since been recognized as valuable by the mining community, something Clowes sees as a major breakthrough and validation of Lithoprobe research.

Mining companies are now putting the proven technologies to use.

Noranda Exploration spent close to \$2 million on seismic applications last year, and Inco Ltd. claims its involvement with Lithoprobe has caused it to modify its world-wide exploration program, Clowes says.

If a Canadian mining company makes even a modest discovery using data or techniques developed during the 20-year project, the resulting benefits to the

Canadian economy in terms of jobs and revenue could very quickly surpass the total cost of Lithoprobe, Clowes says. And, while he doesn't directly link Lithoprobe to any current mining or petroleum discoveries, Clowes credits renewed petroleum exploration on the west coast of Newfoundland in part to advances made as a result of Lithoprobe research in that area.

The mining industry and the Geological Survey of Canada, a major participant in Lithoprobe, have picked up where Clowes and colleagues left off with earthquake research on Vancouver Island. That research continues to expand our understanding of the risks posed by a major earthquake off the B.C. coast.

Other countries are also paying attention to the Lithoprobe example. The Europeans have formed EUROPROBE which, modelled on Canada's example, is aimed at collecting data for the continent.

While the Lithoprobe years have been demanding they have also been rewarding, says Clowes.

"I'd be the first to admit that I've got one of those jobs that's just been a joy to work in," he says. "Because of Lithoprobe, I've had a lot more exposure to people and research in the earth sciences than I would have otherwise."

Clowes, who joined UBC in 1970 after completing a PhD at the University of Alberta and post-doctoral work in Australia, found himself travelling full circle with Lithoprobe when he wound up doing seismic reflection research in southern Alberta, effectively continuing on the work he did as a doctoral student in the 1960s.

Clowes has also gained recognition from his peers, notably the J. Tuzo Wilson Medal he recently received from the Canadian Geophysical Union for outstanding contributions to geophysics. The medal has particular significance for Clowes, because he knew Wilson, a pioneer in the concept of plate tectonics, and knows the previous award recipients.

More important than the personal recognition he has gained though, Clowes says, is the growing awareness of geological sciences in Canada. He hopes this new awareness and interest will make it easier for future researchers to receive the financial support they need.

"As a society we spend billions of dollars putting up space stations and sending out probes into the planetary system because we're curious about what's up there. The night sky has been a source of wonderment to mankind from day one," Clowes says.

"And yet, for some reason, there's not the same interest in good old Mother Earth, despite the fact the Earth provides our sustenance, resources and the hazards with which we must contend.

"It seems to me that, if we're going to put billions into exploring outer space, we should be willing to put a significant amount of research funding into understanding inner space as well. The problem is that inner space is hard to comprehend, you can't just look into it the way you can the night sky. In my mind, that's reason enough to justify Lithoprobe and similar projects around the world."