At the College of Veterinary Medicine and Biomedical Sciences at CSU, the use of animals in teaching and research has long been defined by ethical policies to reduce, refine and replace – reduce the number of animals used, refine techniques, and replace animal models wherever possible with other test systems. With the establishment of the new Tissue Engineering Laboratory within the Department of Environmental and Radiological Health Sciences (ERHS), concerned researchers have one more tool they can use to achieve these goals.

Dr. Tom Eurell joined the ERHS faculty in Fall 2006 from the University of Illinois bringing his expertise in tissue engineering and his experiences as both a veterinarian and researcher. Dr. Eurell, now an Associate Professor in ERHS, received his DVM from the University of Florida, his PhD in immunology from Texas A&M University and is board-certified in toxicology. During his 20-year tenure at the University of Illinois, his main area of research was tissue response to injuries. As a veterinarian, he was interested in reducing the number of animals used in testing, and tissue engineering was a viable option to be explored.

“One of the main reasons I came to Colorado State University was to work with Dr. Tom Johnson (an Assistant Professor in ERHS) who is investigating laser-related eye injuries,” said Dr. Eurell. “The work he is doing is a perfect match for engineered tissues where we can determine the cellular response to laser damage without using living animals. Laser injury research is a very exciting field, but it’s just one of a number of collaborative projects I’m working on.”

Tissue engineering is the use of a combination of cells, engineering materials and suitable biochemical factors to model biological systems. When used for research, engineered tissues can replace live animals in the initial phases of many biomedical studies, resulting in a reduction of the number of animals needed for breakthroughs in biomedical sciences. An example of this approach is the well-known Draize test, developed in 1944 at the Food and Drug Administration, where rabbits are used to test a variety of products and chemicals by dropping the compound of interest into the rabbit’s eyes. Dr. Eurell has engineered artificial corneas from donor rabbit and human corneas to reduce the need for studies in live animals.

“We are trying to understand the best ways to help the eye repair itself following injury and there are many things we don’t know about this process,” said Dr. Eurell. “We are interested in determining
Welcome

I’d like to welcome you to the Winter 2007 edition of Emitter magazine and hope you enjoy this update on what’s going on the Department of Environmental and Radiological Health Sciences. This first edition of the new year is a good time to commemorate the College of Veterinary Medicine and Biomedical Sciences 100th anniversary and encourage everyone to learn more about all the activities planned in the coming year. The centennial kick-off was held in January at the College’s 68th Annual Conference and was quite the celebration with four former deans, our state representative, and many alumni in attendance. I invite you to visit the College’s Web site at www.cvmbs.colostate.edu to find out more about upcoming events.

For the Department, things this year promise to be busy. We have submitted a number of major collaborative proposals which, if they should be funded, promise amazing opportunities as well as logistical and staffing challenges. One proposal is for a National Institute of Occupational Safety and Health (NIOSH) Education and Research Center (ERC) in collaboration with the University of Colorado Health Sciences Center. The ERC would be housed at Fitzsimmons Medical Center and provide a central location for the advancement of our industrial hygiene and health physics programs, as well as provide new research, teaching and outreach opportunities for the Department. A decision is expected from NIOSH in April 2007.

A second proposal in the works for a number of years and was finally completed and submitted in January, is for the Deep Underground Science and Engineering Laboratory. This is a collaborative project with the University of Colorado, Colorado School of Mines and Stonybrook College in New York. Should this project be approved – at an estimated cost of almost $500 million – it will be a huge boon to Colorado in terms of high-level research opportunities and economic development, particularly for Clear Creek County. The laboratory will allow deep underground physics experiments possible because of protection from cosmic rays, as well as experiential learning for health and safety students and professionals in the special challenges of underground facilities. An announcement on this facility is expected in July 2007.

A third very recent development is a proposal from several units at CSU, including ERHS, to offer to help the University of Kerbala in Iraq to rebuild and develop a number of programmatic areas including Environmental Health. Several high-ranking officials from the university will visit CSU in March to discuss further development of this project.

In this edition of Emitter, you’ll also read about a number of other exciting research areas within the Department, including the new Tissue Engineering Laboratory headed up by Dr. Tom Eu-rell who joined our faculty in the fall. Also, Dr. Jennifer Peel and her work in health effects of air pollution. You’ll meet two of our undergraduate students and learn about their work and research experiences, and get up to date on other happenings within the Department. Lastly, on a sad note, we want to pay tribute to two of our colleagues. Dr. Edward Gillette, a Professor in Radiation Oncology, passed away in November after a long battle with cancer, and John Arthur, a 1977 alumni and respected radiation ecologist, also passed away in December from cancer. Our thoughts are with their families.

I hope you find information you can use and stories which capture your interest in this edition of Emitter magazine. I welcome your questions and comments on the magazine and its contents, as well as suggestions for articles for future editions. Please drop us a line or give us a call with your input. I wish each of you a safe and productive 2007 and look forward to hearing from you in the coming months.

Best Regards,

John D. Zimbrick, PhD
Professor and Head
Department of Environmental and Radiological Health Sciences
When used for research, engineered tissues can replace live animals in many biomedical studies, resulting in a reduction of the number of animals needed for breakthroughs in biomedical sciences.
Research Work Allows Undergraduate Student to Co-Author Journal Article and Present Findings at National Conference

Last spring, Kelly Sullivan found herself presenting a poster at the Society of Toxicology’s Annual Meeting in San Diego, and co-author on a paper that was published last year in the *Journal of Toxicology*. For most researchers, this wouldn’t be too unusual, except that Kelly is an undergraduate student in the Department of Environmental and Radiological Health Sciences and Kelly started at CSU as a Biomedical Sciences open option student. However, in her second semester, she declared Environmental Health as her major. She was in the original group of ERHS Freshman Scholars and is now a junior (though by credits she is a senior as she came to CSU with AP credits). The Freshman Scholars Program began in 2004 after implementation by Dr. John Zimbrick, Department Head.

Kelly notes that she has learned a great deal about the process of research during the last three years, including the importance of background work, how to read and interpret scientific articles, deductive reasoning, how to solve problems, how to figure out what to do next, the ins and outs of federal funding and just how expensive research really is to conduct. Her experiences have encouraged her to examine her future under a different light and she is keeping her options open with the hope of entering the DVM/PhD program. She hopes with a DVM/PhD to pursue an internship and residency as a veterinary surgeon.

“I think the laboratory environment has shown me not only how difficult and demanding research can be, but how great the camaraderie and support are so each person can be successful,” said Kelly. “We are all working toward a common goal with cooperation and appreciation of each other’s work, skills and contributions. This makes for a close-knit work environment, and I’ve really enjoyed being a part of that in Dr. Tjalkens laboratory.”

undergraduate students rarely make appearances as presenters at national conferences or, for that matter, co-author papers.

Kelly’s experience stems from her involvement in the ERHS Freshman Scholar’s Program, which is designed to pair incoming freshman with faculty mentors to increase awareness among undergraduates of opportunities in research. Kelly has now worked with her mentor, Dr. Ron Tjalkens, for three years and she has developed expertise in immunofluorescence. Work in Dr. Tjalkens laboratory focuses on astrocyte biology and calcium signaling, mitochondrial dysfunction in neurodegenerative disorders, and molecular regulation of neuro-inflammatory genes. It’s not where Kelly pictured herself when she first applied to CSU, primarily because of her interest in pre-veterinary medicine.

“I applied to, and was selected for, the Freshman Scholar’s Program in ERHS and began working with Dr. Gilkey (coordinator of the Freshman Scholar’s Program),” said Kelly. “It turned out to be the best opportunity I ever had because without it I wouldn’t be working in a lab and wouldn’t have the research technical skills and experience I have now. I am very fortunate to have Dr. Tjalkens as my mentor – I have learned so much from him and have a very different perspective of what it means to be a scientist.”

Kelly Sullivan at work in Dr. Ron Tjalkens laboratory.
When Adam Zandman-Zeman accepted a summer internship with the U.S. Public Health Service (PHS) at the Centers for Disease Control and Prevention (CDC) in Atlanta, he thought he would be gaining practical experience in the field of environmental health. That was until his military orders arrived, along with a military code of conduct book, and Adam wondered if maybe he should have done a better job reading the fine print of his contract.

“I got a little concerned when the military orders arrived because I was completely unaware that the Public Health Service is one of the uniformed services, so I was a commissioned officer for three months – I never had any luck getting my friends to call me sir, though,” jokes Adam who, for a short time, was Ensign Zandman-Zeman and is now “retired” from the service. “There was a naval base close by that I had to go to a couple of times in uniform and people passing me, who had been in the military for years, were saluting me. I couldn’t really get used to that.”

Adam is a senior at Colorado State University, graduating in May, with a double major in environmental health and microbiology. He is particularly interested in epidemiology and is currently applying to a one-year research fellowship with the CDC before applying to medical school where he hopes to complete a MD/MPH program (medical doctor and master's in public health).

Adam’s internship was with the U.S. Public Health Service Junior Commissioned Officer Student Training and Extern Program (JRCOSTEP). The program allows students to gain professional experience with the PHS early in their education. JRCOSTEP participants serve in assignments throughout the country during their official school breaks. Participants apply to work in one of the eight operating divisions that comprise the Department of Health and Human Services (HHS) including such agencies as the Food and Drug Administration, Indian Health Service, National Institutes of Health, and CDC, as well as other non-HHS federal agencies.

During Adam’s time at the CDC, he was based in the Environmental Health group where his experiences ranged from inspecting cruise ships to sampling water on the Colorado River in the Grand Canyon. He also assembled hurricane response kits and coordinated the creation of a database for emergency services including every local and state health department nationwide, as well as researched and responded to questions coming into the CDC regarding environmental health that arrived via telephone or e-mail.

About half of Adam’s time was spent in the office and half in the field.

“Inspecting the cruise ships was a pretty incredible experience,” said Adam. “I had never been on a cruise ship before and just the sheer size of the ships was daunting. One of our inspections was on the Freedom of the Seas which had just been launched as the world’s largest cruise ship. It took our team eight hours to complete the inspection, but it was really fascinating seeing how these ships are run and all the rules and regulations that they have to follow to ensure the health and safety of their passengers.”

Adam was involved in the inspection of four passenger ships during a weeklong stay in Miami. On another trip, towards the end of his internship, he spent a week in Arizona collecting water samples from the Colorado River. The CDC was concerned about waterborne illnesses affecting rafters in the Grand Canyon and wanted to learn what was in the river. Adam would often drive six or more hours to a collection site, and then have to make the return drive to get the samples back to Flagstaff for overnight shipment back to Atlanta.

While Adam gained much from his internship with the CDC, he’s pretty sure he won’t be making a career in a uniformed service anytime soon. Ideally, following completion of his medical and graduate studies, he would like to work from his home base in Anchorage, Alaska, and work internationally in infectious disease epidemiology. While he could get used to the preferential treatment of military personnel at airport security – they get to go to the front of the line – the saluting would still take some getting used to.

Adam Zandman-Zeman takes water samples from the Colorado River. The U.S. Public Health Service is concerned about levels of pathogens in the river with regard to its human visitors.
Dr. Ward Whicker Honored with the College’s Distinguished Alumni Award

Dr. Ward Whicker, a Professor in the Department of Environmental and Radiological Health Sciences, received the College of Veterinary Medicine and Biomedical Sciences Distinguished Alumni Award on Feb. 10 at Colorado State University Alumni Association’s Distinguished Alumni Awards and Recognition Banquet held at the Fort Collins Hilton.

Dr. Whicker is widely viewed as the “father” of radioecology because his early papers essentially defined the study of radionuclide transport through ecosystems. A large portion of his work has focused on understanding how exposure to radiation would impact biologic systems, not just organisms.

Receiving his PhD from CSU in 1965, Dr. Whicker was one of the first graduates of the radiology program in the newly created Department of Radiology and Radiation Biology. After a postdoctoral appointment in Germany, he returned to CSU as a faculty member, conducting groundbreaking research in radioecology and passing on his enthusiasm for and knowledge of the field to his students, most of whom remain active in the field today.

The Colorado State University Alumni Association Distinguished Alumni Awards program exists to recognize CSU alumni and friends who have distinguished themselves professionally, brought honor to the University and have made significant contributions of time and/or philanthropy to the University, and/or their community. Each year, the Colorado State University Alumni Association honors an outstanding alumnus/a from each of the University’s eight colleges. An Honor Alumnus/Alumna is a former student who, by his/her distinguished career and service to the university, state, nation, or world, has brought honor to CSU and to himself/herself.

EHP Program Developers Recognized With Leadership Award

Dr. David Gilkey, an Assistant Professor in the Department of Environmental and Radiological Health Sciences (ERHS), and Judy Heiderscheidt, alumna and retired ERHS Undergraduate Coordinator, received a Colorado’s Pollution Prevention Champions Award from the Colorado Department of Health and Environment’s Environmental Leadership Program. The recognition event was held Sept. 20 at the Denver Museum of Nature and Science.

The award was given for the development and implementation of the Environmental Home Program (EHP) at CSU in ERHS. Service learning is an important part of the undergraduate educational experience in EHP and students take the EHP into local elementary schools to teach key environmental health concepts including sustainability, waste minimization, pollution prevention, resource conservation and chemical safety in the home.

“It was felt that this was deserving of recognition because of the potential to have huge impacts in many lives and embraces those concepts of pollution prevention and sustainability,” noted Dr. Gilkey.

ERHS Calendar

April 17 – Celebrate Undergraduate Research and Creativity (www.curc.colostate.edu)
April 14 – CSUnity Day, campus-wide volunteer event (www.colostate.edu)
May 11-12 – Colorado State University Spring Commencement (www.colostate.edu)
June 2-7 – American Industrial Hygiene Association Annual Conference, Pittsburgh, Penn., www.aiha.org
June 18-21 – National Environmental Health Association Annual Education Conference and Exhibition, Atlantic City, N.J., (www.neha.org)
July 8-12 – 13th International Congress of Radiation Research, San Francisco, Calif., (www.radres.org)
Alumni Group Plans Volunteer Activity for Students/Alums

The event will be part of the annual CSUnity Day, when hundreds of CSU students gather for community service activities in Larimer County.

This year, alumni will be working side by side with current Environmental Health students on a local day of volunteering. The event will be held in the Fort Collins area on Saturday, April 14, starting at 9 a.m. The event will be part of the annual CSUnity Day, when hundreds of CSU students gather for community service activities in Larimer County. The specific service project has not yet been announced, but it is set to run from 10 a.m. until 2 p.m. A networking picnic with CSU Environmental Health students and faculty is scheduled to follow at 3 p.m. on the Colorado State University campus.

If you would like to sign up to volunteer with the EH students, please contact Erin Reichert by March 20 at erin.reichert@colostate.edu or 970-491-7910. More information on CSUnity is available at: www.slce.colostate.edu/slce/volunteer/csunity.aspx.

For more information on the CSU Environmental Health Alumni Group, please contact Mark McMillan at mark.mcmillan@state.co.us or at 303-692-3140; or Kristen Kuhar, Education Coordinator of the National Environmental Health Association at kkuhar@neha.org or at 303-756-9090, ext. 341.

Colleagues Mourn Death of John Arthur III

John Arthur III, a 1977 graduate of the Department of Radiological Health Sciences (now Department of Environmental and Radiological Health Sciences), died of cancer on Dec. 26, 2006, in Las Vegas, Nev., at the age of 53.

“John, one of our most outstanding graduates, received his master’s degree in radiation oncology from Colorado State University,” said Dr. Ward Whicker, Arthur’s co-advisor along with Dr. A.W. Alldredge. “He had a distinguished 27-year career with the Department of Energy where he served in several of the department’s most challenging positions. His death leaves a void in our profession that will be very difficult to fill.”

During his tenure at the DOE, Arthur managed operations in support of some of the largest environmental clean-up and nuclear management programs in the nation. In 2002, he was appointed Deputy Director for Repository Development at the Yucca Mountain Project in Nevada. Prior to that, he was the Manager of DOE’s National Nuclear Security Administration Albuquerque Operations Office, providing oversight of two national laboratories and the nuclear weapons production complex. Other positions within DOE included Manager of the Waste Isolation Pilot Project (WIPP), Manager of the Uranium Tailings Remedial Action Project, and Assistant Manager for Environmental Operations and Services at the Albuquerque Operations Office. He also served as the Acting Chief Operating Officer of the Office of Environmental Management at DOE headquarters in Washington, D.C., and supported the DOE’s Office of Science on special assignment to Brookhaven National Laboratory on Long Island, N.Y.

“John’s impact on the radiation protection community and the nuclear industry is immeasurable,” said Dr. Whicker. “He conducted his work with great skill and integrity. He will be sorely missed by his family, friends and colleagues.”

To read Arthur’s obituary and to view or sign his memorial book, visit www.reviewjournal.com/obituaries/ and view obituaries published on Dec. 31, 2006.
From Auto Emissions to iPods, Professor’s Work Seeks to Improve Public Health

It isn’t by happenstance that Dr. Jennifer Peel is an epidemiologist specializing in public health. Her mother was a participant in the Nurses’ Health Study and received a regular newsletter from Harvard with updates on the study which Dr. Peel found interesting to read when she was growing up. The public health seed was planted, even though it took a bit of watering to sprout, and today Dr. Peel is involved in a similar large scale study that examines the health effects of air pollution.

“I always enjoyed math and science in high school, but really wasn’t sure what I wanted to study,” said Dr. Peel, who is now an Assistant Professor in the Department of Environmental and Radiological Health Sciences. “At Pennsylvania State University I did my undergraduate degree in molecular and cell biology, and worked in a research lab. Following my degree, I worked in North Carolina at a pharmaceutical company doing cancer research and soon found I couldn’t see myself doing lab work for the rest of my career. I decided to look more into the public health field.”

Dr. Peel was accepted into the School of Public Health at Emory University in Atlanta, Georgia, where she received her Master’s of Public Health and PhD in Epidemiology. She continued as a postdoctoral researcher at Emory examining adverse cardiac and respiratory health effects of air pollution. Her research team has collected data from 40 hospitals with more than 10 million visits recorded. The study, with data collected back to 1993, continues today and examines the connection between air pollution conditions and the incidence of emergency department visits for health conditions such as asthma, chronic obstructive pulmonary disease (COPD), pneumonia and upper respiratory infections. The Atlanta study also looks at arrhythmic events in patients equipped with implanted defibrillators, and apnea and bradycardia (an abnormally slow heart rate) in high-risk infants on home cardiopulmonary monitors.

“I really kind of fell into the air pollution study,” reflected Dr. Peel. “They needed a doctoral student and asked me to join. I was personally interested in environmental issues, so it seemed like a good fit. I could have gone in any direction, but I had a great mentor and advisor and got into a field where I feel I can really make a difference.”

Dr. Peel joined CSU in 2004 and, while she continues her work on the air pollution studies in Atlanta, has expanded her research work and taken on teaching duties at CSU. She instructs an undergraduate epidemiology class and coordinates a graduate research seminar class, both of which allow her to enjoy students and share her infectious enthusiasm for epidemiology.

“With epidemiology, we see the impact every day of what we do – how we live and the choices we make not only affects the quality of lives for ourselves, but for others as well,” said Dr. Peel. “Epidemiology can never prove anything; we can only make observations and come up with causal arguments. We don’t show exact cause and effect because we work with humans in a complex world and not in a laboratory. But we can show connections and relationships which can lead to regulations that promote a safer environment and a healthier population.”

Although Dr. Peel’s research continues to focus on environmental epidemiology, she and colleagues have worked on exciting proposals for projects they hope will soon be funded. One proposed project will look at hearing loss in college students from the use of iPods, specifically when used with ear-bud style head sets (Dr. William Brazile, an Assistant Professor in ERHS, is the principal investigator). Another proposed study will look at the health effects of coarse particulate matter in urban and rural areas in Colorado (Dr. Mike Hannigan of the University of Colorado at Boulder, is principal investigator on the project).

As far as the Nurses’ Health Study that originally piqued Dr. Peel’s interest in epidemiology and public health, it continues today with more than 116,000 women enrolled.

“With epidemiology, we see the impact every day of what we do.”

– Dr. Jennifer Peel
Air Pollution Long-Time Contributor to Human Health Problems

Air pollution has been a part of the human condition for as long as people have been burning carbon-based fuels. It evolved into a public health problem as humans moved from their rural roots and established urban communities. As early as the Middle Ages, the use of coal in cities like London was escalating and so were the well-documented problems of poor air quality and pollution-related illnesses. Today, air quality continues to be an increasing concern as pollution sources and accompanying new problems evolve.

The World Health Organization estimates that worldwide, air pollution is responsible for 4.6 million deaths annually (including deaths attributable to indoor air pollution). While air quality standards, like the Clean Air Act in the United States, have reduced some pollutants, concerns continue over the release of many pollutants into the environment from a variety of sources including combustion-fired power plants, industrial complexes, controlled burn practices in agriculture and forestry management (including the burning of rain forests), automotive emissions, marine vessels, burning fossil fuels, and small-source polluters such as fireplaces, stoves, furnaces, yard-care equipment and incinerators.

Dr. Jennifer Peel, an Assistant Professor in the Department of Environmental and Radiological Health Sciences, sees the effects of air pollution every day on human health. As a member of a research team centered at Emory University conducting a long-term epidemiological study on the general population in Atlanta, she’s seen firsthand the jump in emergency department visits that accompanies high pollution days, and the resulting health problems for an already susceptible population.

“For people who have existing health conditions like asthma, chronic obstructive pulmonary disease (COPD), pneumonia, upper respiratory infections and heart disease, air pollution can act as a trigger to increase the severity of their illness or cause a sudden onset of symptoms, as seen in a child with asthma,” Dr. Peel said. “In our work, we are trying to identify those levels that trigger an adverse reaction and determine what the safest levels for pollutants should be, knowing that zero pollutants is not an option.”

In addition to the emergency department data, Dr. Peel and her team have another study that examines the incidence of report for infants on home cardiorespiratory monitors. These infants tend to exhibit sleep apnea early in life and may be at a higher risk for sudden infant death syndrome (SIDS). The monitor is triggered when they have a low heart rate (bradycardia) or when they stop breathing (apnea). Dr. Peel’s study will assess whether there is a connection between pollution levels and increased monitor alarm activity.

Dr. Peel’s research team not only looks at hospital admittances in relation to pollution, they examine special periods in time when pollution levels are predicted to be reduced and morbidity, theoretically, should be lower. For example, during the summer Olympics in Atlanta in 1996, air pollution levels were lower than normal due to voluntary driving restrictions. This provided an opportunity to examine the reverse effect. Another such opportunity was presented in Ireland when most of the country switched from coal power to cleaner burning fuels. Dr. Peel describes these natural experiments as unique opportunities for researchers in the field.

“How air pollution impacts health is still being elucidated,” said Dr. Peel. “Particulate matter and ozone, and the mixtures of thousands of different chemicals and gasses formed in secondary reactions, can cause many health problems. Particles and ozone can cause direct irritation of the lungs. Local inflammation can trigger asthma and COPD as well as cause problems for people with underlying heart disease. We think that particles can lead to systemic inflammation. Also, we believe particles can carry allergens deeper into the lungs and enhance any allergic reaction an individual may have.”

Dr. Peel notes that there has been a trend toward cleaner air in the United States with the clean air legislation in the 1960s, ‘70s and ‘80s, which among other positive benefits has led to improvements in air quality in the Los Angeles corridor and the northeastern United States. Stricter limits on car and industrial emissions, reduction of toxic emissions from factories, and restrictions on burning represent significant steps in the right direction, but much work still needs to be done.

“We have seen improvements in air quality, but for people at risk for certain health problems, we are still working to identify the regulatory levels to best protect human health,” said Dr. Peel. “Through these large-scale studies, we hope to get a better understanding of the impact of pollutants on health, and identify acceptable levels of exposure and risk.”
ERHS Alumna Makes a Difference a World Away

In 1989, Romania was in the news with the overthrow and subsequent executions of its communist dictator, Nicolae Ceausescu, and his wife Elena. After the revolution, the world finally understood the full suffering of the Romanian people as a result of food shortages, power outages, insufficient health care, abandoned children, dangerous working conditions, an HIV epidemic, extreme poverty, and a government that operated Romania as a police state. At that time, Cindy Becnel was one of those watching news out of Romania, but never imagined she would be working there just a few years later.

Becnel, who graduated from Colorado State University in 1988 with a Master’s Degree in Environmental Health, began her journey to Romania long ago when her interest in Industrial Hygiene was piqued by a colleague attending a course on occupational noise exposure at a local university.

“I was trying to figure out what I wanted to major in when a friend told me about the field of Industrial Hygiene,” said Becnel. “The IH program at the University of Houston at Clear Lake, Texas was fairly new then, and before I knew it, I was enrolled in the Industrial Hygiene program taking IH classes and working as an intern at an oil refinery. It was through the internship that I fell in love with the field.”

After graduation and working for a semiconductor manufacturing company, Becnel decided to pursue her Master’s Degree at CSU. There were IH graduate programs in Texas but she wanted to return to Colorado, and primarily saw the presence of the OSHA Health and Safety Consultation Program as a bonus opportunity of attending the Environmental Health / IH program. Her master’s thesis was on asbestos exposure of brake repair workers. Following graduation, Becnel headed to Roche Pharmaceuticals to work in a bulk manufacturing facility which was, she said, one of the most interesting work environments of her career.

“The work was extremely fascinating,” said Becnel. “Finished drugs are administered in small, therapeutic amounts. But the challenges in the pharmaceutical industry were in controlling exposures to large bulk quantities of these same drugs and in working with potent compounds. Exposure limits for these products needed to be developed internally since there are no OSHA exposure limits available. It was great fun working with diverse teams to design containment systems and protective measures for some of these compounds and processes.”

Just as Becnel left the pharmaceutical industry to begin consulting work, another twist of fate led her to Romania. She had expressed interest in international activities and began serving on committees at both the local and national professional IH associations. While living in the Netherlands in 1995, she received her first call to participate in a workshop to reduce lead exposure in a smelter in Romania. Becnel worked on this project as a consultant with the U.S. Agency for International Development (USAID) off and on during a period of three years. When the project was finished, Becnel continued to work with her Romanian colleagues on a volunteer basis to support the development of the Industrial Hygiene profession in Romania.

“When we first started working in Romania, conditions were extremely bleak and difficult,” said Becnel. “Communication was very limited as people were not used to expressing themselves. Some Romanian people we worked with were very cautious about everything they said and everything they did. This January, Romania joined the European Union. In preparation, the Romanians were extremely motivated to improve working conditions and bring industries up to compliance. Today, communication and collaboration are paramount amongst Romanians, and they are very much a part of the global community.”

Last fall, Becnel, as President of the AIHA - Rocky Mountain Section, and three other members from the section, conducted a workshop in Romania with participants at the Babes Bolyai University in Cluj-Napoca, Romania. One of the outcomes of this meeting was to assist the university in redeveloping an IH graduate program curriculum.

“It was very exciting to be able to make this trip with interested colleagues from the local section,” said Becnel, who now works as a consultant with A.G. Wassenaar, Inc., a geotechnical engineering and environmental consulting firm in Denver.

In addition to the health and safety consulting work Becnel does with A.G. Wassenaar, she also is busy with another project involving CSU and the University of Colorado. The two institutions have joined together to apply for a grant to establish a National Institute for Occupational Safety and Health (NIOSH) Education and Research Center (ERC). The proposed Mountain and Plains ERC will focus on serving the Native American and Hispanic working populations, as well as recruiting students into the fields of industrial hygiene, health physics and occupational medicine. If the proposal is granted, Becnel hopes to work with the program as an outreach liaison with the professional practitioner community, providing feedback to the ERC on what the continuing education and professional development needs are in the workforce. A NIOSH decision on the Mountain and Plains ERC proposal is expected in April.

From left to right: Romanian colleagues Dr. Calin Baciu and Dr. Eugen Gurzau, and the AIHA-Rocky Mountain Section team – Cindy Becnel, Todd Hauck, Cynthia Ellwood (all CSU alumni), and Linn Havelick.
Department Loses Pioneer in Veterinary Radiation Oncology

The Department of Environmental and Radiological Health Sciences and the Colorado State University community lost a beloved faculty member on Nov. 17, 2006. Dr. Edward Gillette passed away at home, surrounded by his family, following a 10-year battle with cancer.

“Dr. Gillette’s creativity as a researcher, integrity as a leader, and dedication as a teacher impacted the foundation of the College of Veterinary Medicine and Biomedical Sciences and helped to define the Department as it stands today,” said Dr. Zimbrick. “His work in veterinary radiation oncology had profound impacts on cancer research, including new diagnostics, treatments, and understanding of the biology of cancer.”

Dr. Gillette graduated from Kansas State University College of Veterinary Medicine in 1956 and subsequently served in the Army Veterinary Corp. He attended graduate school at CSU and received a Master’s in Radiology and PhD in Physiology. In 1972, his research team received a grant from the National Cancer Institute to study the late effects of radiation, a project which lasted 25 years. In 1974, the group received an NIH Program Project Grant and Dr. Gillette was named as Director of Comparative Oncology. Once the program found its footing, additional faculty were recruited to CSU and this group served as the genesis of the Animal Cancer Center.

“My goal has always been to improve cancer treatment in humans, and animals are good models for humans,” said Dr. Gillette in an interview for Emitter magazine in September 2006. “I’m proud to say that over the years we were able to improve treatment pretty dramatically with the generous support of our funding agencies. Our experiments could determine normal tissue tolerance in dogs, and we could extrapolate that to human studies. The great part is we not only have helped advance cancer treatment in humans, but we formed the foundation for the Animal Cancer Center and greatly advanced the cancer care in companion animals which had been minimal before veterinary radiation oncology came on the scene.”

For Dr. Gillette, another facet of his career of which he was particularly proud was the people he influenced during his years at CSU.

“Now there are approximately 60 veterinary radiation oncologists in the country because I was the first one,” said Dr. Gillette. “My own students have had wonderful accomplishments and I really enjoy when people come up and talk to me about the influence I had in their lives and careers. That is really a tangible result of what we’ve done over all these years.”

(A fund has been created to honor Dr. Gillette’s life work and his contributions to the field of radiological health sciences. Donations can be made to the Colorado State University Foundation in memory of Dr. Gillette. For additional information, visit the College’s development home page at www.cvmbs.colostate.edu/development/)
Gifts to the Department of Environmental and Radiological Health Sciences are used to fund undergraduate and graduate scholarships, support start-up and established research programs, and provide discretionary funds to the department head that are used where most needed. If you would like to make a donation in support of the Department’s needs and goals, please complete the form below and return with your gift. If you have any questions on making a donation to the Department, please contact Paul Maffey, Development Director for the College of Veterinary Medicine and Biomedical Sciences at paul.maffey@colostate.edu or (970) 491-3932. Please note that you also may make your donation at our secure online site as listed below.

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