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#### WORKSHOP ON CANCER IN RURAL AREAS

L to R (standing): P. Wang, S. Gomez, G. Theriault, C. Zhou, J. Dosman, L. Benson, D. Weisenberger, L. Burmeister, D. Riedel, K. Luo, J. McLaughlin, G. Ewing, R. Semenciw, C. Williams, J. Welykholowa, R. Parker, N. Nelson.  
L to R (seated): A. Blair, J. Spinelli, D. Robson, S. Fincham, H. McDuffie, S. Buzik, S. Dyck.

# CENTRE REPORT '89 - '90

ANNUAL REPORT AND SUMMARY OF ACTIVITIES

CENTRE FOR AGRICULTURAL MEDICINE, DEPARTMENT OF MEDICINE, UNIVERSITY OF SASKATCHEWAN  
Fifth Floor Ellis Hall, University Hospital, Saskatoon, Saskatchewan, S7N 0X0

FOURTH ANNUAL REPORT

May 1, 1989 to April 30, 1990



## Chairman's Message

### "A BOLD EXPERIMENT"

In this, my fourth Annual Report on the Centre for Agricultural Medicine, I would like to share with supporters of the Centre my view that our "Bold Experiment" in establishing the Centre for Agricultural Medicine as a Division of the Department of Medicine in the College of Medicine appears to be succeeding. The two critical questions are (1) Is there a need for a goal-oriented program of research, prevention, service and teaching related to agriculture, its associated and other industries, and rural life?; and (2) Is the manner in which we have established and are developing the Centre for Agricultural Medicine the most effective approach to meeting these needs?

In my view, and as I interpret input from our Board of Directors, various Advisory Committees and staff, the answer to both questions is in the affirmative. Our staff members are pursuing a policy of targeted research that, in my view, would not be possible without the structural advantage offered by the Centre for Agricultural Medicine. This approach has encouraged on-campus collaboration both within the College of Medicine and between Colleges and other on-campus organizations that have assisted our scientists in idea development and research design. The Centre has been successful in securing research funds in national competitions. Two such projects, the study of lung problems in swine producers and the study on chemicals and cancer, in which scientists from six other provinces have joined under the leadership of our faculty are examples of scientific issues that are supported nationally. In addition, we have demonstrated that we can respond to provincial issues. In two projects, both supported by the Saskatchewan Agriculture Development Fund, we are offering seminars in rural areas on safe usage of farm chemicals, and assessment of the respiratory health of

Dr. Leo Kristjanson (right), President, University of Saskatchewan, and Dr. James A. Dosman, Director, Centre for Agricultural Medicine, with the display that the Centre was invited to present at the Global Agricultural Technology Exposition (GATE) in June, 1989.

residents of the Mossbank area exposed to blowing alkali dusts.

In response to the second question on our methods of organizing and supporting the Centre, we are attempting to build a broadly-based coalition of support. The Centre's founding partners are the University of Saskatchewan and the Saskatchewan Lung Association. We have welcomed the University Hospital, the Saskatchewan Association of Rural Municipalities, and the Government of Saskatchewan as key supporters of the Centre. The commencement of the Agricultural Health and Safety Network has signalled the beginning of what we hope will be a vital link for the Centre - an association with individual farm families through the local Municipal Council. The approval by the University Board of Governors of our "Founding Chairs Program", whereby businesses related to our theme will be asked to provide financial support for our programs, rounds out the groupings that we hope will lead to success.

My sincere thank you to everyone: to our co-founding body, the Saskatchewan Lung Association, to the University Hospital, the Saskatchewan Association of Rural Municipalities, and the Government of Saskatchewan - and to all those who have given of their time in committee work and fundraising. To the faculty, staff, trainees and students in the Centre - our thank you and best wishes for another successful year.

Finally, to all our supporters - if you see an area of deficiency or an opportunity for success - please call or write to me or to the staff at the Centre.

Sincerely,

I.M. McDonald,  
Dean, College of Medicine,  
Chairman, Board of Directors

## Our Mandate

Given the resources available, we are trying to fulfill our mandate of research, prevention, service and teaching. The report that follows outlines our activities in each of these areas.

## Research

*Cross-Sectional Study of Respiratory Health in Swine Producers and Indoor Air Quality in Animal Confinement Buildings in Saskatchewan:* Workers in animal confinement barns in Saskatchewan may be at increased risk of developing lung trouble. The objectives of the study are to determine whether swine producers develop respiratory symptoms and lung trouble in excess of control subjects and to assess the role of indoor air quality in these buildings as the cause of lung trouble (Health and Welfare Canada)

*Pesticides, Soft Tissue Sarcoma, Lymphoma, Multiple Myeloma.* Preparation for a proposed cross-Canada study that would involve 1,400 patients and 1,400 age-matched controls of patients to test our methodologies. (Health and Welfare Canada.)

*Canadian Study of Pesticides and Health: A Case-Control Study of Soft Tissue Sarcoma, Hodgkin's Disease, Non-Hodgkin's Lymphoma and Multiple Myeloma:* This project is the extension of the pilot study described above. The risk of each type of cancer in relation to pesticide exposure will be derived and the proportion of such cancers among males attributable to pesticide exposure will be estimated. (Health and Welfare Canada.)

*Respiratory Effects of Inhaled Grain Dust:* An evaluation of the long-term effects of grain dust on human health, and the effects of improved environmental conditions (Labor Canada).

*Lung Trouble in Residents of Mossbank and Area as a Result of Alkali Dust Blowing Off Old Wives Lake:* Drifting alkali dust off desiccated Old Wives Lake bed in Southern Saskatchewan, may increase the risk of developing lung disease. We have studied 300 residents in this area and compared lung function to residents in Gull Lake, Saskatchewan. (Saskatchewan Agriculture Development Fund).

*Occupational Cancer Studies:* The Occupational Cancer Studies Program seeks to evaluate various substances, including agricultural chemicals, in the possible evolution of cancer. (Schulman Request).

*Relationship of Radon Exposure to Lung Cancer:* Radon levels in Saskatchewan homes may be elevated in comparison to several other Canadian provinces. This study evaluates the possible relationship between radon exposure and lung cancer. (Saskatchewan Lung Association.)

*Prevalence of Prostate Cancer in Farmers:* Existing evidence suggests that farmers are prone to increased prevalence of prostate cancer. Prostate cancer remains the most common cancer in Saskatchewan males. (Seaton Family).

*Development of Human Exposure Chamber for Health Assessment of Dusts and Chemicals:* This facility will enable physicians and scientists to more accurately delineate substances to which workers are exposed, to assist in treatment and in Worker's Compensation assessments (Saskatchewan Workers' Compensation Board).

*Study of Incidence and Risk Factors Relating to Farm Accidents and Injuries in Saskatchewan:* Farmers are more likely to sustain injuries and experience violent death than workers in any other major industry. Farm accident data is being collected through Saskatchewan Health and the Saskatchewan Safety Council.

*Chemicals Exposure and Lymphomas in Females in Saskatchewan:* Association between chemicals exposure and these types of tumours is thought to occur in males. This project tests the hypothesis that women may be affected. (Saskatchewan Cancer Foundation).

*Health and Welfare Scholarship: Dr. Dosman has been awarded a National Health Research Scholarship for five years.*

## Conferences

*First Annual Epidemiology Week, June 26-29, 1989:* With Dr. G. Hill, McGill University and Health and Welfare Canada, and Dr. E. Love, Department of Community Health Sciences, University of Calgary, we conducted study sessions on our planned and existing research projects.

*Fourth Annual National Conference on Cancer and Farming December 5th and 6th, 1989:*

This conference, funded by Health and Welfare Canada, and the Saskatchewan Cancer Foundation, was called to evaluate developments in this field and to assist in an application to the Government of Canada for an extended study. Participants included experts from the Centre for Disease Control in Ottawa, the U.S. National Cancer

Institute at Bethesda, Maryland, and others from across Canada and the United States.

*Fourth Annual Provincial Conference on Safety and Accidents:* Our Committee on Farm Safety held a Conference to assess progress of the Saskatchewan Safety Study and to correlate activities in these areas.

## Service

### Occupational Health and Safety Services Division:

The Centre provides respiratory tests and a personalized preventive occupational health program for workers in a number of grain companies and the Weyerhaeuser plant in Prince Albert. A respiratory evaluation of workers and environment assessment in a local brewery, assessment of sheet metal workers and an environmental evaluation of a building thought to pose a respiratory risk to occupants have been conducted. The division prepared an environmental assessment plan for a local meat packing plant.

### Agricultural Health and Safety Network:

In order to establish a base of individual farm families in support of the Centre, and to achieve a preventive respiratory and safety program that is financed and organized at the local level, the Centre for Agricultural Medicine has, with the assistance of Saskatchewan Municipal Councils, enrolled farm families into the Agricultural Health and Safety Network in 17 participating Municipalities.

### Labour Canada Grain Dust Medical Surveillance Program Statistical Contract:

The Centre continues to manage the statistical medical information base and ongoing surveillance for the cross-Canada program for more than 7,000 grain elevator workers.

### Effects of Agricultural Chemicals on Health and Initiation of Chemicals Safety Seminars:

This year, the Centre is presenting a seminar series aimed at safe handling of chemicals. (Saskatchewan Agriculture Development Fund).

### Service Access Enhancement for Rural Families:

To enhance family support services related to stress and other family problems, the Centre and the Regina Family Service Bureau have proposed the installment of a telephone hotline across the province.

**Global Agricultural Technology Exposition:** The Centre participated in the 1989 Global Agricultural Technology Exposition (GATE) from

June 15 - 17, 1989, in Saskatoon. The Centre's display was designed to suggest innovative solutions for prevention of farming-related diseases and promote rural life enhancement.

## Publications

### Books

Dosman JA, Cockcroft DW, (eds): *Principles of Health and Safety in Agriculture*. CRC Press, Boca Raton, Florida, 1989.

Dosman JA, Cockcroft DW, (eds): *Obstructive Lung Disease*. W.B. Saunders Company, Medical Clinics of North America. (in press), 1990.

### Papers

Dosman JA, TO T, Epidemiological principles in the identification of an occupational health risk: Airways obstruction in grain workers. In: Dosman JA, Cockcroft DW, (eds) *Principles of Health and Safety in Agriculture*, CRC Press, Boca Raton, Florida, 1989, pp. 3-7.

Dosman JA, Graham BL, McDuffie HH, Hall D, Van Loon P, Bhasin P, Froh F, Respiratory health in farmers: Symptoms and pulmonary function. In: Dosman JA, Cockcroft DW, (Eds) *Principles in Health and Safety in Agriculture*, CRC Press, Boca Raton, Florida, 1989, pp. 50-54.

Cotton DJ, Armanious M, Wright J, Dosman J, Carr I, Grain dust and alveolar macrophages: An experimental study of the effects of grain dust on the mouse lung. In: Dosman JA, Cockcroft DW (eds) *Principles of Health and Safety in Agriculture*, CRC Press, Boca Raton, Florida, 1989, pp. 110-112.

Cotton DJ, Graham BL, Li KYR, Barnett GD, Dosman JA, Effects of grain dust exposure and smoking on respiratory symptoms and lung function. In: Dosman JA, Cockcroft DW (eds) *Principles of Health and Safety in Agriculture*, CRC Press, Boca Raton, Florida, 1989 pp.138-143.

McDuffie HH, Dosman JA, Klaassen DJ, Cancer, genes, and agriculture. In: Dosman JA, Cockcroft DW (eds) *Principles of Health and Safety in Agriculture*, CRC Press, Boca Raton, Florida, 1989, pp. 258-261.

McDuffie HH, Dosman JA, Klaassen DJ, Lung Cancer in Saskatchewan males. In: Dosman JA, Cockcroft DW, (eds). *Principles of Health and Safety in Agriculture*. CRC Press, Boca Raton, Florida, 1989, pp. 262-264.

Dosman JA, Cockcroft DW, Rural problems in respiratory disease. *Respiratory Times*, 1989.

Dosman JA, Safety and Health: Grain Dust - The Health Issue of the '90's. Proceedings of the 60th International Conference and Exposition of the Grain Elevator and Processing Society, "Exchange", 1989.

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Hurst TS, Dosman JA, Characterization of health effects of grain dust exposures, *American Journal of Industrial Medicine* 17:27-32, 1990.

Hurst TS, Dosman JA, Graham BL, Hall D, Van Loon P, Bhasin P, Froh F, Respiratory symptoms and pulmonary function in Saskatchewan farmers. *American Journal of Industrial Medicine* 1990.

Dosman JA, Kania J, Cockcroft DW, Occupational Obstructive disorder: Nonspecific airways obstruction and occupational asthma. In: Dosman JA, Cockcroft DW (eds) *Obstructive Lung Disease*. W. B. Saunders Company, Medical Clinics of North America. (in press), 1990.

Dosman JA, Gomez S, Zhou C, Relationship between airways responsiveness and the development of chronic obstructive pulmonary disease. In: Dosman JA, Cockcroft DW (eds) *Obstructive Lung Disease*. W.B. Saunders Company, Medical Clinics of North America, (in press), 1990.

McDuffie HH, Maturation of a research idea. A series of articles for Life and Breath: I) Lung cancer and farming. II) Differences between men and women who develop lung cancer. III) Clustering of cancer in families of patients with lung cancer. Saskatchewan Lung Association publication, 1989.

Chen Y, Pederson LL, Lefcoe NM, Passive smoking and low birthweight. *Lancet* 2(8653):54-55, 1989.

Chen Y, Synergistic effect of passive smoking and artificial feeding on hospitalization for respiratory illness in early childhood. *Chest* 95:1004-1007, 1989.

Zhou C, Respiratory symptoms and lung function in jute processing workers: a primary investigation. *Arch Environ Health* 44(6):374, 1989.

Luo K, Bigsby RM, Xin LA, Cunha GR, Strain differences in the ontogeny of estrogen receptors in murine uterine epithelium, *Endocrinology* (accepted for publication), 1990.

Chen Y, Pederson L, Exposure to environmental tobacco smoke (ETS) and serum thiocyanate level in infants, *Archives of Environmental Health*, (accepted for publication), 1990.

### Technical Reports

Gomez SR, Dosman JA, McDuffie HH, the respiratory health effects of drifting alkali dust on residents to the south and east of Old Wives Lake in Saskatchewan. Report prepared for the Saskatchewan Agriculture Development Fund, February, 1990.

McDuffie HH, Dosman JA, Pahwa P, To T, Final Report: Statistical analysis of the environmental and medical surveillance program in the grain industry, Cycle III (1984-1987). Prepared for Labour Canada, July, 1989.

### Abstracts and Scientific Presentations

Dosman JA, Cotton DJ, Graham BL, Pahwa P, McDuffie HH, Respiratory symptoms in new grain workers: Increase from employment commencement of four years' exposure. *Am Rev Resp Dis* 139(4) suppl A552, 1989.

McDuffie HH, To T, Pahwa P, Dosman JA, Cross-sectional improvement in respiratory symptoms and pulmonary function among grain handlers in Canada. *Am Rev Resp Dis* 139(4) suppl A552, 1989.

McDuffie HH, Klaassen DJ, Dosman JA, Pesticide use and primary lung cancer in Saskatchewan. *Am Rev. Resp. Dis.* 1989; 139(4), suppl. p.A546 Canadian Public Health Association Annual Meeting, Winnipeg, June 21, 1989.

Dosman JA, McDuffie HH, Day R, The Agricultural Health and Safety Network: An outreach program aimed at prevention of disease and disability. Canadian Public Health Association Annual Meeting, Winnipeg, June 21, 1989.

McDuffie HH, Pahwa P, Dosman JA, Respiratory symptoms and pulmonary function of grain handlers surveyed longitudinally. XVI World Congress on Diseases of the Chest, Boston, Oct. 30 - Nov. 1, 1989. *Chest* 1989;96(2), suppl 172S

Hill G.B., Dosman J.A., McDuffie H.H., Canadian study of pesticides and sarcomas. Canadian Sociology and Anthropology Association Annual Meeting, Quebec City, June 5, 1989

McDuffie HH, To T, Pahwa P, Dosman JA, Improvements in respiratory health of Canadian grain handlers. XVI World Congress on Diseases of the Chest, Boston, Oct 30 - Nov. 1, 1989. *Chest* 1989(2), suppl 270S.

Dosman JA, Cotton DJ, Graham BL, Pahwa P, McDuffie HH, Respiratory symptoms in new grain workers from employment commencement to four years' exposure. *Clinical and Investigative Medicine*, 12:8-93, 1989

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McDuffie HH, Atopy and carcinoma of the lung in females. *Am J Human Genetics* 43(3), suppl A28.

McDuffie HH, Atopy, primary lung cancer histology and gender, *Am Rev Respir Dis* 1989;139(4) suppl; A547. Royal College of Physicians and Surgeons Annual Meeting, September, 1989. *Clinical and Investigative Med.* 1989, 12(4): suppl B80, abstract R-486.

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Horne S, McDuffie HH, Effects of occupation and Pi phenotype on the risk of smokers developing emphysema. Canadian Public Health Assn Annual Meeting, Winnipeg, 1989.

McDuffie HH, The prevalence of atopy in farmers and non-farmers with primary lung cancer. Royal College of Physicians and Surgeons Annual Meeting, Edmonton, September, 1989. *Clinical and Investigative Med.* 1989, 12(4) B93, abstract R-474.

McDuffie HH, Pulmonary dysfunction related to cigarette smoking pattern: An important contributing factor in familial primary lung cancer? American Society Human Genetics Annual Meeting, November, 1989. *Am J Genetics* 45(4) suppl: A244.

McDuffie HH, Women at Work. Workshop on Cancer in Rural Areas. Saskatoon, December, 1989.

## Teaching

Doctoral Students and Postdoctoral Fellows are: Chen Zhou, Ph. D. studies in Inhalation Toxicology; Stephen Gomez, Postdoctoral Fellow, Environmental Epidemiology; Robert Parker, Respiratory Environmental Medicine Resident; Ken Luo, Postdoctoral Fellow, Occupational Cancer Studies; Yue Chen, Postdoctoral Fellow, Environmental Epidemiology, In 1990, Karen Semchuk, will begin her Postdoctoral studies on the relationship between environmental exposures, and the development of Parkinson's and other neurodegenerative diseases. Mrs. Louise Hagel, Occupational Health Nurse, has begun lectures in the College of Nursing. Summer Nursing Students: Shelley Kyrchuk, Krista Baerg and Lori Towstego.



Louise Hagel, Occupational Health Nurse, Centre for Agricultural Medicine