

Fellowship Program Council of State and Territorial Epidemiologists

This application requests a masters or doctoral level Birth Defects and Developmental Disabilities Epidemiologist CSTE Fellow for the Minnesota Department of Health (**MDH**), Division of Environmental Health (**DEH**), Environmental Impacts Analysis (**EIA**) Unit. The EIA Unit currently manages both the lead poisoning prevention and newly developed birth defects programs. We work closely with many other divisions within MDH to meet program needs, including the Community and Family Health Division (which includes Newborn Hearing and Screening, Minnesota Children with Special Health Needs program, Fetal Alcohol Syndrome program, and others), the Infectious Disease Epidemiology and Prevention and Control Division (Immunization program), and Health Promotion and Chronic Disease Division (Cancer surveillance, asthma programs). We also have extensive interaction with local public health agencies across the state.

Agency and Supervisor Information:

<u>Primary Supervisor:</u>	Myron Falken, MPH, PhD, Principal Epidemiologist
<u>Secondary Supervisor:</u>	Daniel Symonik, MS, PhD, EIA Unit Supervisor
<u>Agency Name:</u>	Minnesota Department of Health
<u>Mailing Address:</u>	121 E. 7 th Place, Suite 220 St. Paul, MN 55101
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Scope of the Assignment:

The MDH is in the process of implementing a Birth Defects Information System (BDIS) consistent with statutory language passed in 2004. The primary goals of the Birth Defects Program are to monitor incidence trends of birth defects to detect emerging health concerns and identify affected populations, educate physicians and the public regarding birth defects, ensure appropriate services are provided to affected families, prevent birth defects through targeted education, and to stimulate research on risk factors, treatment, prevention, and the cure of birth defects. The BDIS will begin active birth defect surveillance in the Twin Cities Metro area for a clinically targeted subset of the National Birth Defects Study list (44 conditions). As the system becomes more established, conditions will be added and the geographic coverage area expanded to be statewide. Specific goals that would be assigned to a CSTE Epidemiology Fellow are to:

1. Evaluate BDIS data collection system for accuracy, timeliness, and completeness and develop recommendations for improvements to ensure data quality.
2. Analyze the initial years of birth defects surveillance data and assist in generating and interpreting rates and trends.
3. Identify and evaluate data needs of specific newborn and childhood programs that may be integrated to provide more effective services/referral to identified children.
4. Assist in developing, implementing, and evaluating primary prevention activities related to folic acid (especially reoccurrence of NTDs) and other birth defects.

Assignment Description:

As a new public health surveillance system, there are a number of assessment and evaluation measures that are needed to ensure that data is gathered, interpreted and reported appropriately. Although limited pilot studies have been conducted, further evaluation and data analysis/interpretation needs to be completed. Extensive collaboration and policy work will also be required to secure the needed resources to expand the current system from its regional scope to full, state-wide coverage.

The Epidemiology Fellow will (level of effort in parenthesis):

1) Evaluate BDIS (45%)

These activities will include the evaluation of the accuracy, completeness, and timeliness of selected BDIS data sources (e.g. active surveillance, Medicaid data, hospital discharge data, Newborn Hearing and Screening data, vital statistics data, and genetic clinics) and an assessment of the impact of the “opt out” clause (see MS 144.2216) on data quality. Evaluation will also be continued on the referral process for birth defects referral outcomes to assure that affected families are linked with public health services. This will involve an inventory of current data sources/quality and a quantitative evaluation of implications of the “opt out” clause on data and on referral patterns. Evaluation of the surveillance system will be consistent with recent CDC guidelines that emphasize an assessment of system attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, positive predictive value, representativeness, timeliness, and stability. The Epidemiology Fellow will be incorporated into the management team by regular reports in meetings with birth defects program staff, updates to management at major milestones, and coordination with external partners (with special emphasis on the Minnesota March of Dimes). Past activities included comparison of active surveillance with vital statistics from an in-house hospital disease index from a large metro hospital, as well as an evaluation of birth defects from a large Neonatal Intensive Care Unit. Activities will follow up on work conducted by the current CSTE Epidemiology Fellow. Her work has been crucial to the ongoing success of the BDIS and has resulted in her authoring a manuscript accepted in the *Journal of Neonatology*. She also has done presentations at numerous national birth defects meetings and assisted in the generation and interpretation of rates and trends for birth defects in Minnesota. MDH Mission: This activity will help fulfill the legislative mandate to the commissioner of health to “establish and maintain an information system containing data on the cause, treatment, prevention, and cure of major birth defects.” (MS 144.2215). Resources: This activity will be supported by funds targeted to the ongoing development and implementation of BDIS, including federal grants, in-kind contributions, and future applications for resources. End products: A summary report will be presented assessing data quality and program implementation. Documents in support of additional legislation and funding will need to be generated and scientifically defended. The ultimate outcome of this activity is the more effective operation of the Birth Defects Program for the benefit of individuals and families affected by birth defects in Minnesota.

2) Analyze initial BDIS data and assist in data interpretation (25%)

The specific goals of the BDIS include monitoring incidence trends to detect emerging health concerns and identifying affected populations. Under the direction of the primary supervisor, statistically characterized rates and trends will be developed as valid data is generated. This information will be summarized and distributed to interested parties consistent with state data privacy limitations. Data will be compared to values found by other state programs, national information sources, and published literature, as appropriate. Qualifiers will be presented to clearly indicate any limitations in the data being reported. Data collection is starting in 2005, so a full year of data will be available in late 2006 and on an ongoing basis thereafter. Additional tasks may include developing and implementing special studies as needs arise. Examples include gastroschisis cases in southern Minnesota (currently working with Mayo Clinic) and recurrence of NTDs. End Products: An annual report will be generated to characterize the data quality, estimate rates within the limitations of the data, and provide summary information on other conditions to interested parties.

3) Assist in Secondary Prevention Efforts (15%)

This effort will involve compiling an inventory of current data sets and common fields that will be used to implement and evaluate a set of pilot studies of potential linkages and referral patterns/procedures. Those studies will then be used to foster data sharing and provide a more integrated system for connecting affected children and their families with available, appropriate services. This may include planning and implementing a linkage of the Birth Defects database with the Newborn Screening and Hearing Program and other MDH data sources as appropriate (e.g. the Blood Lead Surveillance and the Immunization databases). Other partners will include the Minnesota Children with Special Health Needs program, local public health agencies, and regional health care providers. End products: The Birth Defects database will be linked to the Newborn Screening and Hearing Program's database. All applicable policies and Memorandum's of Understanding will also be developed and implemented. Reducing infant mortality rates, proper screenings, on time immunizations and earlier interventions improve the lives of all Minnesotans by reducing health care, social services and education costs.

4) Assist in primary prevention activities (15%)

We are continuing efforts to collaborate with many parts of MDH and a range of external partners with respect to the need for increasing physician and parent awareness of taking folic acid to prevent birth defects. These activities have resulted in targeted mailings, outreach activities, and the purchase/posting of folic acid educational materials. This includes administrative responsibility for the Minnesota Folic Acid Council. The Epidemiology Fellow will assist in implementing and evaluating folic acid education efforts, including the development of targeted public materials, pre/post tests to monitor effectiveness, tracking project outcomes, and communicating results to collaborating partners and the public. In addition, Minnesota has recently received the first year of Pregnancy Risk Assessment Monitoring System (PRAMS) data. The PRAMS data, in

conjunction with the BDIS data, will help target populations for folic acid/NTD prevention efforts. Special emphasis will be placed on preventing reoccurrence of NTDs, with a focus on educating at-risk mothers regarding folic acid use and promotion of other healthy behaviors. End products: Efforts will be coordinated with MDH Birth Defects staff, Minnesota Folic Acid Council members, and the March of Dimes, resulting in more effective collaboration and timely completion of proposed projects.

Supervision and Mentorship:

Primary supervisor: Myron Falken, MPH, PhD, has 23 years of experience in the collection, validation, and interpretation of environmental health data, including birth defects, blood lead surveillance, occupational exposures, and other reportable diseases. He has mentored numerous student interns and recently hosted a CSTE Epidemiology Fellow (Barbara Frohnert) targeting work on birth defects. He also is adjunct faculty at the University of Minnesota, which will allow applicants access to collaboration with other faculty and academic opportunities.

Secondary supervisor: Daniel Symonik, MS, PhD is a Unit Supervisor within DEH overseeing the lead surveillance and birth defects programs. He has 15 years of professional experience dealing with a range of environmental health issues as an analytical chemist, toxicologist, health assessor, and program manager. Training plan: The primary and secondary supervisors are readily available on a daily basis and maintain an open door policy. Weekly meetings may also be scheduled which will allow for direct and timely feedback on assignments and progress towards established goals. Targeted training is also available through the MDH “Center for Workforce Development” and other regional sources. Competing duties for Supervisors: Dr. Falken currently has Co-Principal Investigator and epidemiology responsibilities for implementation of BDIS, consults on special projects for the Childhood Lead Poisoning Prevention program, and is partially supported by State general funds thereby allowing him to collaborate on a range of environmental health surveillance and department initiatives (e.g. BRFSS, data quality and reporting standards, development of integrated child records). Dr. Symonik currently has Co-Principal Investigator and administrative duties for BDIS, supervises all staff for the Childhood Lead Poisoning Prevention program, and is entirely supported by state general funds thereby allowing for collaboration on a range of issues (legislative initiatives, special research and policy projects on lead).

Curriculum vitae for Supervisors:

Myron C. Falken

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Zimmerman, MN 55398
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Professional Experience

Principal Epidemiologist, Environmental Impact Analysis

Minnesota Department of Health; May, 1995 to Present

Project epidemiologist for the Childhood Lead Prevention and Surveillance program. Project epidemiologist for the development of environmental surveillance systems. Birth Defects Surveillance Epidemiologist and Co-Principal Investigator of CDC grant. Responsible for the implementation of policies and procedures to ensure accuracy, completeness and timeliness of state-wide environmental surveillance systems, development of studies to determine prevalence of blood lead poisoning in children and adults, and the design of clinical studies to evaluate environmental contaminants and birth defects.

Community Health Administrator; Isanti and Mille Lacs Counties Public Health Director

Isanti County; 1992 to 1994

Dental Disease Prevention Coordinator, Dental Health

Minnesota Department of Health; 1989 to 1992

Education

B.S. (1974) and M.S. (1976). Microbiology. South Dakota State University at Brookings.
M.P.H. (1983) and PhD (1990). Public Health (emphasis on biometry and epidemiology). University of Minnesota.

Selected Teaching/Lecture Experiences

Guest Lecture, U of Minnesota, Microbiology of the Human Environment Seminar: 1987-1990.

Instructor, Anoka Ramsey Community College, Microbiology 201.9 -- 5 credit: 1984-89.

Various topics in lead poisoning prevention and surveillance: 1995-present.

Faculty, Midwest Center for Occupational Health and Safety, U of Minnesota 1995 - 2002.

Adjunct Assistant Professor, Division of Occupational and Environmental Health, U of Minnesota, 2004.

Select Publications

Brummit, F.C., Crossley, K.B., Falken, M.C. 1988. Penicillin-resistant streptococcus pneumonia. *Am. J. Clinical Path.* 89(2):238-242.

Hastreiter, R.J., Roesch, M.H., Danila, R.N., Falken, M.C. 1991 Minnesota dental professionals response to HIV and infection control. *J. Public Health Dent.*, 51(2):124.

Falken, M.C., Ploetz, D.K. 1998. Childhood Lead Poisoning. *Minnesota Medicine*, 81:57-58.

Symonik, D, B. Bernauer, and M. Falken. 2002. Minnesota Childhood Blood Lead Guidelines. *Minnesota Medicine*. 85(10):44-49.

Erik W. Zabel, M.C. Falken, M Sonnabend, M Alms, D.M. Symonik. 2005. Prevalence of elevated blood lead levels and evaluation of a lead risk screening questionnaire in rural Minnesota. *J. Env. Health* In Press.

Daniel M. Symonik

3588 Tiffany Lane
Shoreview, MN 55126
(Bus.) 651-215-0776; (Res.) 651-481-0190

Professional Experience

Supervisor, Environmental Impacts Analysis Unit.

Minnesota Department of Health; May, 2000 to Present

Direct 9 professional staff and coordinate interactions with other stakeholders to characterize the impact of environmental health threats. Co-Principal Investigator for CDC Birth Defects grant, CDC Childhood Lead Poisoning Prevention grant.

Environmental Health Assessor

Minnesota Department of Health; 1993 - 1997

Section Manager, Superfund Remedial Projects Section

Utah Department of Environmental Quality; 1991 – 1993

Toxicologist, Division of Environmental Health

Utah Department of Health; 1988 - 1991

Education:

BS (1982). Water Resources Chemistry. University of Wisconsin - Stevens Point

MS (1987). Toxicology and Fisheries Biology. Iowa State University

PhD (2001). Environmental Health. University of Minnesota

Selected Teaching/Lecture Experiences:

- Ø University of Minnesota School of Public Health, Richard G. Bond Memorial Lecture, 10/02
- Ø Invited lecturer, "Topics and Advances in Pediatrics"; University of Minnesota Medical School, 6/02
- Ø Invited lecturer, "Pollution Impacts on Aquatic Systems"; U of MN, 1/98
- Ø Preparing Future Faculty program, U of MN; completed in 1997
- Ø Invited lecturer, "Chemistry in Context", Macalester College, Minneapolis, MN 3/97
- Ø SETAC; Second World Congress, Vancouver, BC, Canada 11/95

Publications:

Symonik, D, B. Bernauer, and M. Falken. 2002. Minnesota Childhood Blood Lead Guidelines. *Minnesota Medicine*. 85(10):44-49.

James RR, JG McDonald, DM Symonik, DL Swackhamer, RA Hites. 2001. Volatilization of toxaphene from Lakes Michigan and Superior. *Environ Sci Technol*. 35(18):3653-60.

Symonik, D, L. Pogoff, F. Wallner, P. Pederson, J. Penina, K. Studders, and R. Messing. 1999. Coal tar remediation in an urban environment. *J. Env. Health*. 61:14-19.

Soule, R., D. Symonik, D. Jones, D. Turgeon, and B. Gerbec. 1996. Vinyl chloride loss during laboratory holding time. *Reg. Tox. Pharm.* 23(3):209-212.

Symonik, DM, JR Coats, SP Bradbury, GJ Atchison, and JM Clark. 1989. Effects of fenvalerate on metabolic ion dynamics in the fathead minnow and bluegill. *Bull. Environ. Contam. Toxicol.* 42:821-828.

Coats, JR, DM Symonik, SP Bradbury, SD Dyer, LK Timson, and GJ Atchison. 1989. Toxicology of synthetic pyrethroids in aquatic organisms: an overview. *Environ. Toxicol. Chem.* 8:671-679.