

## CURRICULUM VITAE

Scott C. Collingwood, PhD Candidate  
November, 2006

### I. EDUCATIONAL AND PROFESSIONAL HISTORY

#### A. Education (least to most recent)

<u>Institution</u>	<u>Dates</u> <u>Attended</u>	<u>Field of</u> <u>Study</u>	<u>Degree</u> <u>Obtained</u>
University of Iowa College of Engineering Nova Gorica Polytecnic	1986-1991	Industrial Engineering	BSE
University of Minnesota	Summer 2001	Environmental Epidemiology	Completed
University of Iowa College of Public Health	2000-2006	Aerosol & Particle Measurement Industrial Hygiene-- Occupational & Environmental Health	Certificate  PhD (Dec 06)

#### B. Certification/Membership Activities

<u>Board/Professional Organization</u>	<u>Date</u>
American Industrial Hygiene Association	2000-Present
American Conference of Governmental Industrial Hygienists	2001-Present
National Safety Council	2001-Present

#### C. Professional and Academic Positions

<u>Position Title</u>	<u>Dates</u> <u>of Service</u>	<u>Location/Institution</u>
President -Owner & Manager	1991-1997	EPC Inc 5422 Blairs Forest Way NE Cedar Rapids, IA 52240
Manager -Engineering / Technical Sales	1997-1999	Master Halco Inc 8620 East Hwy 40 Kansas City, MO 64129
Industrial Hygienist -Occ. & Env. Health Services	2000-2003	OralB Laboratories 1832 Lower Muscatine Rd Iowa City, IA 52240
Industrial Hygienist -Evaluation/Research	Intermittent 2002-2003	Worksafe Iowa University of Iowa Dept Occupational & Env. Health Iowa City, IA 52242
Industrial Hygienist -Evaluation/Research	Intermittent 2001-Present	I <sup>3</sup> HSA University of Iowa Dept Occupational & Env. Health Iowa City, IA 52242

Graduate Research Assistant	2000-2005	University of Iowa Dept Occupational & Env. Health Iowa City, IA 52242
Research Associate	2005-Present	University of Utah Rocky Mountain Center for Occupational & Environmental Health Salt Lake City, UT 84108
Instructor	2005-Present	University of Utah-RMCOEH Continuing Education Salt Lake City, UT 84108

**D. Honors, Awards, Recognitions, Achievements--Academic (least to most recent)**

<u>Year</u>	<u>Title</u>
2001	CIREH Fellowship Recipient—provided funding to study, instruct, preview research, perform preceptorship at Nova Gorica Polytechnic, Slovenia.
2001	Iowa Illinois Industrial Hygiene Association Local Section—Scholarship
2001	Governor's Safety Award—State of Iowa, Department of Labor
2002	Tichauer Award—Best Ergonomic Poster AIH/Ce
2002-2003	Clyde M. Berry Endowed Scholarship—AIH Foundation
2004	Iowa Illinois Industrial Hygiene Association Local Section—Scholarship
2000-2004	NIOSH Traineeship

**E. Participation in Research Projects and Skills Associated (least to most recent)**

<u>Project</u>	<u>Duties/Skills</u>
Characterization of Airborne Particulate in a Bristle and End Rounding Process in a Tooth Brush Manufacturing Plant.	<p>Lead role in a 3-person team to perform a comprehensive evaluation of airborne ultrafine / fine aerosol in response to employee concern with regards to respiratory health.</p> <ul style="list-style-type: none"> <li>Administered/interpreted area and personal samples (total dust, cascade impactor, PM2.5, PM10, optical particle counter)</li> <li>Electron microscopy on bristles and investigation indicated kaolin clay being dislodged in production and was constituent of aerosol.</li> <li>Presented report orally and in writing (authored) to company administrators.</li> </ul>
DOE Atomic Energy Commission Former Worker Program.	<p>Part of the research team involved in data gathering and subject enrollment for former atomic weapons workers at a DOE facility in Iowa.</p> <ul style="list-style-type: none"> <li>Contributed to the development of questionnaires and screening protocol.</li> <li>Obtained occupational and medical histories.</li> <li>Obtained and cataloged historical IH data.</li> <li>Developed production history and exposure matrix.</li> </ul>

<p>Evaluation of Carbon Monoxide exposures in a Warehouse/Shipping operation.</p>	<p>Performed CO monitoring for regulatory and recommended exposure level compliance using direct reading, data logging instrumentation.</p> <ul style="list-style-type: none"> <li>• Presented written report of finding/recommendations including research on health implication for CO and diesel exhaust particulate.</li> </ul>
<p>Evaluation of a material handling task at a hide processing facility.</p>	<p>Lead role in a 2-person team performing an ergonomic assessment at a large leather processing facility.</p> <ul style="list-style-type: none"> <li>• Used direct and subjective measures for ergonomic evaluation (emg, hrm, strain index, self report etc.).</li> <li>• Identified specific tasks likely responsible for increased risk of MSD and recommended appropriate intervention(s).</li> <li>• Presented report orally and co-authored written report presented to company administrators.</li> </ul>
<p>IH Investigation for causes of fatigue &amp; strain in Quality Control Inspectors in a manufacturing facility.</p>	<p>Primary role in a 5-person team to investigate cause of health concerns of inspectors in a production process.</p> <ul style="list-style-type: none"> <li>• Walkthrough, interview and subsequent IH/Ergo analysis revealed a deficiency in lighting for a highly detailed inspection stage likely responsible for health concerns.</li> <li>• Used Digital light meters to quantify fluorescent and mercury lighting for inspectors and provided a lighting 'map' for facility.</li> <li>• Primary author of report presenting results and recommendations to the company.</li> </ul>
<p>Safety Evaluation at a CNC machining facility for OE supplier to the automotive/farm machinery industry.</p>	<p>Part of a 2-person team performing a comprehensive occupational health and safety evaluation in the company's effort to achieve VPP certification with Iowa OSHA.</p> <ul style="list-style-type: none"> <li>• Performed all the IH and Safety Evaluation for receiving, manufacturing, shipping and maintenance departments.</li> <li>• Assisted with ergonomic evaluations.</li> <li>• Co-authored written report/recommendations as well as oral presentation to company supervisors.</li> </ul>
<p>EPA Pesticide Exposure Study.</p>	<p>Part of 3-person field research team to conduct exposure assessment on farm workers during pesticide application on Iowa farms.</p> <ul style="list-style-type: none"> <li>• Scheduled and performed biological, dermal and air sampling in the field and then subsequent in-house preparation of samples for laboratory analysis.</li> <li>• Maintained proper records for chain of custody and good laboratory practices.</li> </ul>

Aerosol Generation by Blower Motors as a Bias in Assessing Aerosol Penetration into Cabin Filtration Systems.

Part of 2-person team determining the aerosol generation from blower motors and effects on maintenance testing with regards to ASSE standard.

- Designed and constructed laboratory apparatus and performed testing of various blower motors with optical particle counters.
- Performed field analysis in Iowa & Minnesota on functioning agricultural and construction equipment with aforementioned blower motors as part of a cabin filtration system to corroborate laboratory findings.

Noise Survey in a consumer products manufacturing facility.

Lead role in a 3-5 person team to perform comprehensive noise compliance and exposure survey in a union labor manufacturing facility. This has been an annual survey for the past 4 years.

- Designed and performed sampling strategy utilizing Quest Q-300 instruments to simultaneously evaluate OSHA, ACGIH compliance.
- Performed octave band analysis to characterize noise of manufacturing cells and identify equipment requiring maintenance.
- Authored 3 of the 4 written reports presented to company.

Ventilation & Filter Requirements for Local Exhaust Ventilation during Mortar Removal.

Component to my doctoral research: Research, design and test a variety of applicable filters and vacuum systems, hoses and shrouds to be integrated as a LEV engineering control for silica exposure during mortar removal in construction.

- Designed and built laboratory apparatus to determine fan curves for vacuum cleaner systems.
- Evaluate friction factors/pressure loss for shroud and flexible hose associated with a local exhaust ventilation.
- Designed and built laboratory apparatus to calculate size dependent aerosol penetration in a variety of mechanical and electret filter media.
- Designed and built laboratory apparatus to measure size dependent aerosol penetration through vacuum cleaner system when intermittently loaded with pulverized, silica-laden mortar.

Determine Respirable Silica Exposure Implications for Construction Workers performing Mortar removal utilizing a Local Exhaust Ventilation System.

Component to my doctoral research: Conduct field studies to determine exposure outcome of construction workers performing mortar removal with an intervention aimed at reducing respirable silica exposures.

- Performed field studies under the intervention condition measuring respirable dust and respirable silica at the worker's breathing zone, vacuum exhaust and ambient conditions.
- Perform video exposure monitoring to identify work practices and conditions where intervention is beneficial and deficient (aerosol photometer for exposure and pressure transducer for volumetric flow rate of LEV).
- Compare outcomes with non-intervention exposure data sets.

Ergonomic Assessment of an Engineering Control for Silica Exposures during Mortar Removal.

Component to my doctoral research: Conduct a controlled experiment to evaluate the physical requirements to mortar removal with a powered hand tool both with and without engineering control to reduce respirable silica exposures.

- Designed and performed field study to evaluate physical effort required to perform mortar removal task under two conditions (intervention and non-intervention).
- Evaluated with direct measure (electromyography—emg) and self-report (Borg scale questionnaire) and videography (biomechanical models and subjective assessment).
- This is a novel study to examine the ergonomic implications of an engineering control designed to manage a traditional IH exposure.

## II. TEACHING

### A. Teaching Assignments at the University of Iowa

<u>Semester/Year</u>	<u>Course Title/Number</u>	<u>Semester Hours</u>	<u>Number Students</u>	<u>Role</u>	<u>Percent Responsible</u>
Summer 2001	Env. Epidemiology 165:834	2	16	Graded daily homework and conducted study sessions	10%
Fall 2001	Occupational Safety, 175:192	3	7	Prepared & Conducted Lecture on Electrical Safety	6%
Spring 2002	IH: Control, 175:233	3	3	Arrange/Conduct Ventilation Field Trip	6%
Spring 2003	IH: Evaluation, 175:232	4	5	Taught Lab-Aerosol Measurement	6%
Spring 2004	IH: Evaluation, 175:232	4	4	Taught Lab-Aerosol Measurement	6%

#### *Formal Study to Improve Teaching Abilities*

<u>Year</u>	<u>Institution</u>	<u>Course Title</u>
Fall 2003	University of Iowa	Research Skills & Teaching for Health Scientists

### Teaching Assignments at the University of Utah

<u>Semester/Year</u>	<u>Course Title/Number</u>	<u>Semester Hours</u>	<u>Number Students</u>	<u>Role</u>	<u>Percent Responsible</u>
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Fa2005	Fundamentals of Industrial Hygiene, FPMD 6750	2	8	Primary Instructor	90%
Fa2005	Industrial Toxicology & Physiology, FPMD	3	12	Guest Lecturer	6%
Sp2006	Continuing Education Short Course-Fund. IH	NA	20	Primary Instructor	90%
Sp2006	Continuing Education Short Course-Certified Decon Specialist	NA	12	Primary Instructor	95%
Sp2006	Noise and Other Physical Agents, FPMD 6754	2	9	Primary Instructor	90%
Fa2006	Fundamentals of Industrial Hygiene, FPMD 6750	2	6	Primary Instructor	92%
Fa2006	Continuing Education Short Course-OHSMS:ANSI Z10	NA	36	Primary Instructor	100%

**B. Other Contributions to Educational Programs**

<u>Date</u>	<u>Title</u>	<u>Location</u>
02/2002	Moderator—Construction Safety Conference	Stevens Convention Center, Rosemont, IL
04/2002	Moderator—Construction Safety Conference	Stevens Convention Center, Rosemont, IL
03/2002	Moderator—Construction Safety Conference	Stevens Convention Center, Rosemont, IL
08/2001-2005	Iowa-Illinois Industrial Hygiene Student Association -elected by peers as Secretary (2001/02) then President (2002/03) -active member to current	Department of Occupational & Environmental Health, University of Iowa, Iowa City, IA
08/2004-2005	Industrial Hygiene Journal Club	Department of Occupational & Environmental Health, University of Iowa, Iowa City, IA
04/2006	Co-Coordinator—University of Utah NORA Symposium	Officers Club, Salt Lake City, UT
05/2006-2007	Session Arranger—American Industrial Hygiene Conference and Expo	Expo Center Philadelphia, PA.
08/2005-Present	Center (Faculty) Advisor—University of Utah Industrial Hygiene Student Association	University of Utah-RMCOEH Salt Lake City, UT
10/2005-Present	Committee Member-IH Coordinator to the Annual Utah Conference on Industrial Hygiene & Safety	University of Utah-RMCOEH Salt Lake City, UT

### III. SCHOLARSHIP

#### A. Publications or Creative Works (least to most recent)

##### *Peer-Reviewed Papers*

1. Heitbrink WA, **Collingwood S**. Aerosol generation by blower motors as a bias in assessing aerosol penetration into cabin filtration systems. *J Occup Environ Health*. 2: 45-53, 2005.
2. **Collingwood S**, Heitbrink WA. Field Evaluation of an Engineering Control for Respirable Crystalline Silica Exposures During Mortar Removal. Accepted October 2006, *J Occup Environ Health*.

##### *Non-Peer-Reviewed Papers (reports, proceedings, etc.)*

1. Heitbrink WA, **Collingwood S**. Protecting Tuckpoint Workers from Silica Dust: Draft Recommendations for a Ventilated Grinder. A Center to Protect Workers' Rights Publication, January 2005.
2. **Collingwood S**, Heitbrink WA. Recommendations for Controlling Silica and Dust Exposures During Masonry Restoration. Conference Proceedings of the 2006 University of Utah NORA Symposium. In Press.

##### *Reviews*

1. **Collingwood S**, Heitbrink WA. Review/write up in response to presentation at the 2005 Construction Safety Conference: Practical Recommendations for Controlling Silica Exposure in Tuckpoint Workers, Bureau of National Affairs, March 2005.

##### *Conference Presentations (Author/Presenter is Scott Collingwood unless otherwise noted)*

<u>Year</u>	<u>Title</u>	<u>Organization</u>
2000	Recommendations for using Cardiac MRI Movies to Calculate Ejection Fraction—Presented by Dr. Bolinger	Magnetic Resonance Imaging Symposium, London, England.
2001	Poster Presentation—Characterization of Particulate in an End Rounding Operation in a Manufacturing Facility.	American Industrial Hygiene Conference & Expo—New Orleans
2002	Poster Presentation—An Ergonomic Assessment of a Hide Processing	American Industrial Hygiene Conference & Expo—San Diego.
2004	Podium Presentation--Control Measures for Mortar Removal	American Industrial Hygiene Conference & Expo—Atlanta.
2005	Podium Presentation—Practical Recommendations for Controlling Respirable Silica during Tuckpointing	Construction Safety Conference--Chicago
2005	Roundtable Presentation--Development of Recommendations for the control of Silica Exposure in Tuckpoint Workers	American Industrial Hygiene Conference & Expo—Anaheim.
2006	Podium Presentation—An Ergonomic Evaluation of a Hand-Tool Modification Used During Mortar Removal	University of Iowa Colloquium on Occupational Health Research—Iowa City, Iowa via teleweb.

2006	Podium Presentation— Recommendations for Controlling Silica and Dust Exposures During Masonry Restoration	University of Utah NORA Symposium—Salt Lake City, Utah.
2006	Podium Presentation—Research to Practice: An Engineering Control for Silica Exposures in Construction	23 <sup>rd</sup> Annual Utah Conference on Industrial Hygiene & Safety—Salt Lake City, Utah.
2006	Podium Presentation—Overview of the new ANSI Z10 Occupational Health and Safety Management Standard.	23 <sup>rd</sup> Annual Utah Conference on Industrial Hygiene & Safety—Salt Lake City, Utah.
2006	Podium Presentation—Meth Lab Cleanup: Utah Regulations	23 <sup>rd</sup> Annual Utah Conference on Industrial Hygiene & Safety—Salt Lake City, Utah.
2007	Submitted: Podium Presentation The Industrial Hygiene Consultant's Role in Clandestine Drug Lab Assessment and Decontamination - Practical Experiences (1 <sup>st</sup> Author: D Nye)	American Industrial Hygiene Conference & Expo—Philadelphia.

**B. Areas of Research Interest/Current Projects**

Techniques for the characterization and measurement of environmental and industrial aerosols.  
 Development of practical controls for IH exposures emanating from sound research.  
 Evaluation and remediation of occupational health hazards in underserved populations.  
 Utility of LEV in General Industry and Construction.  
 Ergonomic implications of engineering controls.  
 Use of novel exposure assessment methodologies in OEH.  
 Intervention Effectiveness Research.

**C. Grants Received** (*ALL grants, least to most recent*)

Title •Source •P.I.	% Salary Support, Role	Period of Funding
Burlington Atomic Energy Commission Plant--Former Worker Program. •US Department of Energy •Fuortes, PI	Up to 75% Role included identification, collection and interpretation of existing historical IH and medical surveillance data for former AEC work sites and employees.	08/2000-07/2002
Agricultural Health Study (AHS) Pesticide Exposure Study: Iowa Field Study •Battelle Memorial Institute /U.S. EPA •Jones PI	50% Coordinate and conduct biological, dermal and air sampling for pesticides and their constituents in a farming population.	06/2002-09/2002

Flow Rate and Pressure Loss Relationships for Shrouds Used During Mortar Removal. •Center to Protect Worker’s Rights •Heitbrink-PI,	37.5%	09/2002-10/2003
Evaluate Aerosol Generation by Blower Motors as a Bias in Assessing Aerosol Penetration into Cabin Filtration Systems. •Heartland Center for Occupational & Environmental Health. •Heitbrink & Collingwood Co-PI	Up to 75% Conducted research and analysis. Co-author manuscript.	08/2002-06/2003
Comprehensive Ergonomic Assessment of an Engineering Control for Silica Exposure in Construction Workers. •Heartland Center for Occupational & Environmental Health. •Collingwood PI	50% Design & Conduct Experiment. Perform analysis and reporting.	08/2003-06/2004
Control Measures for Silica Exposures in Tuckpointing. •CDC:NIOSH •Heitbrink PI	Up to 50%	09/2002-08/2005
Occupational Safety & Health Solutions, Co-instructor for Development of Capstone Course in Occupational Health. •University of Utah •Sesek PI	NA	05/2005-05/2006

**D. Invited Presentations** (least to most recent)

<u>Year</u>	<u>Title</u>	<u>Organization</u>
2001	DOE	Iowa Illinois Industrial Hygiene Local Section
2001	Fellowship & Preceptorship Experiences-Slovenia	Occupational & Environmental Health Seminar—University of Iowa
2002	Ergonomic Assessment: Hide Wringing Operation	Occupational & Environmental Health Seminar—University of Iowa
2003	What is Industrial Hygiene?	Kirkwood Community College Career Services
2003	Field Study Silica	Occupational & Environmental Health Seminar—University of Iowa
2003	Field Study Blower Motor	Iowa Illinois Industrial Hygiene Local Section
2003	Application of a novel data logging device for assessing risk factors for UEMSD’s in construction workers.	University of Illinois at Chicago / NIOSH
2004	What is Industrial Hygiene?	Kirkwood Community College Career Services
2004	Control Measures for Mortar Removal	Iowa Illinois Industrial Hygiene Local Section

2005	Comprehensive Ergonomic Assessment of an Engineering Control for Construction Workers	University of Cincinnati, A NIOSH ERC
2006	Review of Utah's New Regulations for the Decontamination of Clandestine Drug Laboratories.	American Industrial Hygiene Utah Local Section Meeting.