DEDICATED TO SUPPORTING AND CONDUCTING RESEARCH TO IDENTIFY, MEASURE, AND PREVENT ADVERSE HEALTH OUTCOMES RELATED TO EXPOSURE TO ENVIRONMENTAL TOXINS.

CENTER FOR HEALTH EFFECTS OF ENVIRONMENTAL CONTAMINATION

2018 ANNUAL REPORT

THE UNIVERSITY OF IOWA

Office of the Vice President for Research

The University of Iowa (UI) Center for Health Effects of Environmental Contamination (CHEEC)

is a multidisciplinary environmental research center that supports and conducts research to investigate possible health outcomes related to exposure to environmental toxins. CHEEC is comprised of faculty from the UI Departments of Civil and Environmental Engineering, Epidemiology, Occupational and Environmental Health, Chemistry, and the State Hygienic Laboratory. Participating areas include the State Hygienic Laboratory, the Iowa Registry for Congenital and Inherited Disorders., and other Centers and Institutes at the University of Iowa. CHEEC works cooperatively with the Iowa Departments of Natural Resources (IDNR), Public Health (IDPH), and Agriculture and Land Stewardship (IDALS).

Center activities include 1) developing and maintaining environmental databases to be used in conducting research, 2) cooperating and collaborating on environmental health research programs and projects, 3) managing a seed grant program to support environmental health research, 4) providing environmental health education programs to the citizens of the state and the region, and 5) serving on state and local committees to provide environmental health expertise.

CHEEC's mission, as described in the 1987 Iowa Groundwater Protection Act, is to "determine the levels of environmental contamination which can be specifically associated with human health effects." This report presents an overview of CHEEC research programs and educational activities during 2018.

Environmental Databases

CHEEC maintains databases on Iowa water quality, including the Iowa Historical Municipal Water Treatment and Supply Database, the Municipal Analytical Water Quality Database, and the Statewide Rural Well Water Survey (SWRL). Safe Drinking Water Act data through 2017 were added for all Iowa public water systems to the Municipal Analytical Water Quality Database.

Iowa Municipal Water Systems

The CHEEC Municipal Analytical Water Quality Database contains information from numerous sources including state and federal special surveys, regulatory programs (Safe Drinking Water Act), and various academic studies. This database houses information from the 1950s to the present. The Historical Municipal Water Supply Source and Treatment Database contains information dating back through the early 1900s. In 2018, CHEEC updated this database with information provided by IDNR for all Iowa public water systems.

Iowa Private Drinking Water Wells

CHEEC maintains data from surveys of Iowa private drinking water wells. The Iowa Statewide Rural Well Water Survey (SWRL, 1988–89) was conducted by CHEEC and the Iowa Geological Survey Bureau as part of the implementation of the Iowa Groundwater Protection Act. SWRL provided a statistically valid assessment of the proportion of private rural wells and rural residents affected by various water contaminants. A total of 686 wells were sampled for coliform bacteria, nitrate, 27 pesticides and major inorganic ions. A second phase of the SWRL study (SWRL2) was conducted in 2006–08, in which 473 private rural drinking water wells were sampled; 116 of the wells were original SWRL wells; the other wells were randomly selected from the IDNR's Private Well Tracking System. SWRL2 tested for the same contaminants as the original SWRL, with the addition of arsenic and several pesticide degradates. The Iowa Community Private Well Study (2002–03) includes water quality data for 230 private drinking water wells in 50 incorporated Iowa towns not served by a public water supply system.

Research and Data Management

In 2018, several studies that used data from CHEEC were published.

Which water to drink? Costs and benefits of alternatives.

Authors: E. Brands and R Rajagopal
Organizations: Environmental Studies Program, University of Minnesota Morris; Geographical and Sustainability Sciences, University of Iowa
Journal: Scientific Federation of Public Health 2. March 2018.
http://scifedpublishers.com/fulltext/which-water-to-drink-costs-and-benefits-of-alternatives/22001

Maternal arsenic exposure and non-syndromic orofacial clefts.

Authors: J. Suhl, S. Leonard, P. Weyer, A. Rhoads, A.M. Siega-Riz, T.R. Anthony, T. Burns, K. Conway, P. Langlois, P. Romitti
Organizations: College of Public Health, University of Iowa; Birth Defects Epidemiology and Surveillance Branch, Texas Department of State Health Services
Journal: Birth Defects Research. October 2018.
https://onlinelibrary.wiley.com/doi/full/10.1002/bdr2.1386

Drinking water disinfection byproducts and risk of orofacial clefts in the National Birth Defects Prevention Study

Authors: P. Weyer, A. Rhoads, J. Suhl, T. Luben, K. Conway, P. Langlois, D. Shen, D. Liang, S. Puzhankara, M. Anderka, E. Bell, M. Feldkamp, A. Hoyt, B. Mosley, J. Reefhuis, P. Romitti, The National Birth Defects Prevention Study
Organizations: Center for Health Effects of Environmental Contamination; College of Public Health, University of Iowa; National Center for Environment Assessment, Office of Research and Development U.S. EPA; Birth Defects Epidemiology and Surveillance Branch, Texas Department of State Health Services; Environmental Statistics Collaborative, Chesapeake Biological Laboratories, University of Maryland Center for Environmental Science; Center for Birth Defects Research and Prevention at the Massachusetts Department of Health; School of Public Health, State University of New York at Albany; University of Utah School of Medicine; Department of Pediatrics, Arkansas Children's Hospital; Division of Congenital and Developmental Disorders, National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention
Journal: Birth Defects Research. August 2018.
https://onlinelibrary.wiley.com/doi/full/10.1002/bdr2.1348

High prevalence of elevated blood lead levels in both rural and urban Iowa newborns: Spatial patterns and area-level Covariates

Authors: M. Carrel, D. Zahrieh, S. Young, J. Oleson, K. Ryckman, b. Wels, D. Simmons, A. Saftlas
Organizations: Departments of Geographical & Sustainability Sciences, Biostatistics, and Epidemiology, University of Iowa; State Hygienic Laboratory at University of Iowa
Journal: PloS One. Republished April 2018.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177930

Ingested nitrate and nitrite, disinfection by-products, and pancreatic cancer risk in postmenopausal women

Authors: A. Quist, M. Inoue-Choi, P. Weyer, K. Anderson, K. Cantor, S. Krasner, L. Beane Freeman, M. Ward, R. Jones
Organizations: Occupational and Environmental Epidemiology Branch, Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health; Metabolic Epidemiology Branch, Division of Cancer Epidemiology and Genetics, National Cancer Institute; Center for Health Effects of Environmental Contamination; Division of Epidemiology and Community Health, School of Public Health, University of Minnesota; Metropolitan Water District of Southern California, La Verne, CA.
Journal: International Journal of Cancer. September 2017
https://onlinelibrary.wiley.com/doi/full/10.1002/ijc.31055

Ingested nitrate, disinfection by-products, and kidney cancer risk in older women

Authors: R. Jones, P. Weyer, C. DellaValle, K. Robien, K. Cantor, S. Krasner, L. Beane Freeman, M. Ward
Organizations: Occupational and Environmental Epidemiology Branch, Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health; Center for Health Effects of Environmental Contamination; Department of Exercise and Nutrition Sciences, Milken Institute School of Public Health, George Washington University, Washington DC; and Metropolitan Water District of Southern California, La Verne, CA.
Journal: Epidemiology. September 2017.
https://insights.ovid.com/crossref?an=00001648-201709000-00010

Drinking water nitrate and human health: an updated

review

Authors: M. Ward, R. Jones, J. Brender, T. de Kok, P. weyer, B. Nolan, C. Villanueva, S. van Breda

Organizations: Occupational and Environmental Epidemiology Branch, Division of Cancer Epidemiology and Genetics, National Cancer Institute; Department of Epidemiology and Biostatistics, Texas A&M University, School of Public Health; Department of Toxicogenomics, GROW-school for Oncology and Developmental Biology, Maastricht University Medical Center; Center for Health Effects of Environmental Contamination; U.S. Geological Survey, Water Mission Area, National Water Quality Program; ISGlobal;

Hospital del Mar Medical Research Institute; Department of Experimental and Health Sciences, Universitat Pompeu Fabra; CIBER Epidemiología y Salud Pública

Estimated maternal pesticide exposure from drinking water and heart defects in offspring

Authors: J. Kim, M. Swartz, P. Langlois, P. Romitti, P. Weyer, L. Mitchell, T. Luben, A. Ramakrishnan, S. Malik, P. Lupo, M. Feldkamp, R. Meyer, J. Winston, J. Reefhuis, s. Blossom, E. Bell, A.G. Agopian, the National Birth Defects Prevention Study

Organizations: University of Texas School of Public Health; Birth Defects Epidemiology and Surveillance Branch, Texas Department of State Health Services; College of Public Health, University of Iowa; Center for Health Effects of Environmental Contamination; National Center for Environmental Assessment, United States Environmental Protection Agency; Community Epidemiology and Health Planning Unit, Cook County Department of Public Health, Oak Forest Health Center; Department of Pediatrics, University of Texas; Department of Pediatrics, Baylor College of Medicine; Division of Medical Genetics, Department of Pediatrics, University of Utah School of Medicine; Division of Public Health, Birth Defects Monitoring Program, State Center for Health Statistics; Department of Obstetrics and Gynecology, University of North Carolina; National Center on Birth Defects and Developmental Disabilities, CDC; Department of Pediatrics, University of Arkansas for Medical Sciences, Arkansas Children's Hospital Research Institute; Department of Environmental Health Sciences, University at Albany School of Public Health

Case study approach to modeling historical

disinfection byproduct exposure in Iowa drinking waters

Authors: S. Krasner, K. Cantor, P. Weyer, M. Hildesheim, G. Amy

Organizations: Metropolitan Water District of Southern California, Water Quality, La Verne, CA; National Cancer Institute, National Institutes of Health; Center for Health Effects of Environmental Contamination; Medical Research Solutions, LLC; College of Engineering, Computing and Applied Sciences, Clemson University

Low-level arsenic exposure from drinking water is associated with prostate cancer in Iowa.

Authors: T. Roh, C. Lynch, P. Weyer, K. Wang, K. Kelly, G. Ludewig

Organizations: Interdisciplinary Graduate Program in Human Toxicology and Departments of Biostatistics, Epidemiology and Occupational and Environmental Health, University of Iowa; Center for Health Effects of Environmental Contamination

RESEARCH GRANT FUNDING

Seed Grant Program

CHEEC administers a Seed Grant Program that supports pilot level research across a range of environmental research topics. Seed grant projects are small-scale studies designed to test new and unusual hypotheses, develop innovative methodologies in laboratory and field settings, or perform initial statistical analyses to support efforts to acquire federal or private grants for larger studies. The funding primarily provides support for graduate students, which strengthens graduate programs, creates innovative research, and fosters interdisciplinary development of research opportunities.

CHEEC awards about one-third of its annual Agricultural Management Account allocation in seed funding. Since 1989, this investment has generated almost ten dollars in external funding for every dollar invested by the program; seed grant projects have attracted over 51 grants worth over twenty-eight million dollars in external funding for additional research. Over 120 articles describing seed grant projects have been published in peer-reviewed journals. A link to publications can be found on CHEEC's website at: https://cheec.uiowa.edu/research/publications.

Projects funded through the Seed Grant Program are required to address issues relevant to the State and citizens of Iowa. In the last funding cycle, for example, topics of awarded projects included detection of harmful algal blooms, the prevalence of lead and copper contamination of drinking water supplies of small, rural Iowa communities, and the occurrence and fate of agriculturally derived pathogens, among other areas of research. The full list and brief summary of the Seed Grant awards made by CHEEC in FY 2018 follow:

Harmful algal bloom detection at ultra-high spatial and temporal resolution using small unmanned aircraft systems

Investigators: C. Markfort, G. LeFevre. UI Department of Civil and Environmental Engineering, University of Iowa; M. Skopec. Iowa Lakeside Laboratory

Executive Summary: Researcher teams at IIHR – Hydroscience & Engineering propose to develop new drone-based technology for water quality measurements, in collaboration with Iowa Lakeside Laboratory, to provide rapid and high-resolution detection of potentially harmful algal blooms (HABs) in Iowa lakes and reservoirs. We will develop a tool that combines remote sensing cameras and unmanned aircraft systems (UAS) to conduct on-demand and rapid sampling of water quality without the need for chemical water testing. This pilot study will utilize infrared and multispectral camera instruments mounted on a heavy payload octocopter UAS or drone, which was developed and operated by Markfort's Environmental Fluid Mechanics and Renewable Energy lab to characterize atmospheric boundary layer winds and terrestrial surface properties including vegetation, to detect HABs.

Engaging Iowa citizens to measure and understand lead in their drinking water

Investigators: D. Latta, M. Scherer,C Rehmann, Department of Civil and Environmental Engineering, University of Iowa; K. Dalrymple, School of Journalism and Mass Communication, University of Iowa

Executive Summary: We propose to engage, encourage, and enable the public to participate in collecting and analyzing their own drinking water for lead (Pb). Lead is regulated in drinking water under the Safe Drinking Water Act (SDWA) due to its toxicity to human health. In Iowa, 41 water systems have exceeded the action level for Pb in their drinking water since 2012, impacting a population of 18,039 people in the last 5 years. We propose to work with community partners in Iowa to evaluate whether Pb test kits can be used by citizens to accurately detect and measure Pb in their drinking water. We also propose to survey Iowa citizens to evaluate their understanding of Pb in drinking water and attitudes towards drinking water quality. We will focus on gaining a better understanding of what Iowans know about their current drinking water quality as well as their perceptions of risks posed by Pb in their drinking water. Our work will address the growing need for an

Seed Grant Program

educated and engaged citizenry committed to the sustainable management of water resources. Our proposal here is part of our long-term vision to create a sustainable drinking water lead monitoring program in Iowa.

Rapid characterization approach of Harmful Algal Blooms (HABs) cyanobacteria in Iowa waters

Investigators: S. Dai, M. Schuller, M. Yacopucci, W. Aldous, R. Jepson, N. Hall, State Hygienic Laboratory at The University of Iowa

Executive Summary: Harmful algal blooms (HABs) caused by cyanobacteria are a serious environmental problem in natural water. Exposure to cyanobacteria metabolites can lead to human poisoning and animal mortality. The proposed study will focus on investigating the major HAB species in Iowa by analyzing samples from the current State Beach Monitoring Program. Microcystin positive environmental samples will be used for isolate cultivation and strain library construction. A unique mass spectrometry platform, so called Matrix Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF-MS), will be used to develop a rapid strain identification assay. This integrated approach will help determine the major cyanobacteria species that lead to algal blooms in Iowa and establish a cyanobacteria library for rapid species identification. The constructed cyanobacterial library will be shared resources for the research community. Findings from this study will help facilitate environmental risk management and develop mitigation strategies to reduce human and animal health risk.

Quantifying viral and bacterial pathogens in Iowa's karst landscape for a quantitative microbial risk assessment

Investigators: E. Baack, J. Enos-Berlage, Department of Biology, Luther College

Executive Summary: Winneshiek County in NE Iowa experiences elevated rates of some waterborne diseases. The area's karst geology, which provides rapid routes for surface contaminants to reach aquifers, springs, and streams, leads to exposure risks via well water consumption and contact with recreational surface waters, both of which are prevalent in the region. To address these risks, we will collect pathogen data needed for the exposure assessment step of a quantitative microbial risk assessment, as well as pathogen source information necessary for risk management. Samples will be collected from 20 wells during the spring and from 7 surface waters following summer rainfall events. Quantitative PCR will be used to establish the abundance of diverse water-borne pathogens. In addition, species-specific fecal markers will be quantified to establish sources.

Cooperative Research Projects

The CHEEC Cooperative Research Program seeks to leverage research funds from university, state, and federal entities to conduct research in areas of mutual interest; the collaboration requires matching funds from participating entities.

Since the Cooperative Research Program was established in 1999, **16 projects have been funded**.

Over the life of the Cooperative Research Program, this investment has generated almost **$1,700,000 in matching funds, or almost four dollars in match for every dollar awarded** by the center.

Like the Seed Grant Program, it seeks to establish innovative lines of environmental health research leading to preliminary results that may be used in seeking further larger grant funding from federal and private sources.

CHEEC awarded the following cooperative research grant in FY 2018.

Northeast Iowa Well Water Study

Investigators: D. Thompson, University of Iowa College of Public Health/CHEEC, R W. Field, H.J. Lehmler, C. Lynch, College of Public Health, University of Iowa, S. Dai, J. Vargo, State Hygienic Laboratory at University of Iowa, D. Cwiertny, College of Engineering/CHEEC, R. Jones, M. Ward, J. Hofmann, L. Beane-Freeman, National Cancer Institute; D. Kolpin, M. Hladik, US Geological Survey; C. Hines, National Institute for Occupational Safety and Health

Cooperative Partners: Center for Health Effects of Environmental Contamination, U.S. Geological Survey, National Cancer Institute, Agricultural Health Study, State Hygienic Laboratory at University of Iowa, Department of Civil and Environmental Engineering and College of Public Health at University of Iowa.

Executive Summary: Neonicotinoids are a relatively new class of insecticide, but have quickly become the most widely used class of agricultural insecticides in the world.

Cooperative Research Projects

Historically, neonicotinoid insecticides have been viewed as ideal replacements for more toxic compounds, like organophosphates, due in part to their perceived limited potential to impact the environment and human health. The use of neonicotinoids has become particularly intense in Iowa and neighboring states as a corn and soybean seed treatment. Few studies have been conducted to characterize human exposure to neonicotinoids or the insecticides potential health risks.

Based on the increased intensity and geographic use of the more commonly used neonicotinoid insecticides in the U.S., pesticide applicators in Iowa have high potential for exposure from using corn and soybean seeds coated with neonicotinoids (see example of imidacloprid use Figure 1). Although the Agricultural Health Study (AHS) has been collecting information on pesticide usage and estimating exposures since 1993, AHS-based studies assessing neonicotinoid exposure and potential adverse health outcomes have not been performed. In fact, there have been no analytic epidemiologic studies performed nationwide that have assessed neonicotinoid-related adverse health outcomes using individual level exposure data. The long-term goal of the proposed research is to assess the health risk posed by chronic exposure to neonicotinoid insecticides and their metabolites. In addition, the study will assess exposure risks of other environmental contaminants such as nitrate, arsenic, lead, broad spectrum pesticides and their degradates, perfluorinated alkylated substances, antibiotics and pharmaceuticals, and selected microbes.

Investigation of prenatal and postnatal exposures in the etiology of breast and thyroid cancers in young adult Iowa women

Investigators: P. Romitti, C. Lynch, J. Oleson, K. Conway, University of Iowa College of Public Health; A. Thomas, Wake Forest University School of Medicine; K. Stewart, University of Maryland

Cooperative Partners: Iowa Registry for Congenital and Inherited Disorders, Wake Forest School of Medicine, Breast Cancer Program, Iowa SEER Cancer Registry, University of Iowa, Center for Public Health Statistics, University of Maryland College of Behavioral and Social Sciences, Center for Geospatial Information Science, University of Iowa, Reproductive Molecular Epidemiology Research and Education Program

Executive Summary: Breast and thyroid cancers pose an increasing health threat to young adult women ages 20-39 years in the United States (U.S.). Analysis of cancer surveillance data for the years 1992-2011 from 13 U.S.

Surveillance, Epidemiology, and End Results (SEER) Cancer Registries identified that the annual incidence of Stage I-III hormone receptor-positive breast cancer among women ages 20-29 years and 30-39 years in Iowa, ranked second and fourth, respectively among the 13 registries. A recent review of Iowa SEER Cancer Registry data identified that the incidence of thyroid cancer has increased markedly from 1974-1983 to 2004-2013 among Iowa women ages 25-39 years. Even with this changing epidemiology, risk factors that contribute to these premenopausal malignancies are not well studied. Moreover, factors examined for postmenopausal breast and thyroid cancers do not seem to explain their increased incidence among premenopausal women. Because premenopausal breast and thyroid cancers are often hormonally mediated, their onset may be influenced by exposure to endocrine disrupting chemicals (EDCs), and such exposure could begin prenatally. To date, investigation of prenatal exposures and premenopausal breast and thyroid cancers is limited, and investigation of both prenatal and postnatal exposures is largely unexplored. Funded researchers believe that breast cancer and thyroid cancer in young adult Iowa women have geospatial predilections, suggesting estrogenic environmental risks from birth to diagnosis. Further they hypothesize that differences in hormone exposure are associated with increased incidence and worse outcomes for young adult women with hormone receptor-positive than those with hormone receptor-negative disease. The study will also will allow us to easily incorporate annual updates of cancer surveillance and birth and death data to monitor future patterns of cancer occurrence and emerging exposures in this cohort. Elucidating etiologies of breast and thyroid cancers in young adult women is critical due to the prevalence of these diseases, as well as the marked personal and societal impacts of cancer diagnosis at a young age. The study can help provide insights into these etiologies, an important step to developing interventions to reduce the incidence of these malignancies in young adult women.

Education Programs

CHEEC participates in environmental health education activities through organizing, funding and hosting educational programs, and giving presentations at conferences, workshops and public meetings across the state. In 2018, CHEEC participated in a number of programs on water quality in Iowa across the state. Talks were presented at the Iowa Governor's Conference on Public Health, Pesticides and Public Health Forum, Geological Society of America North-Central Section meeting, Iowa Ground Water Association Meeting, Cedar Rapids Gazette Iowa Ideas Conference, Des Moines Water Works Citizen Academy, Iowa Rural Health Association Fall Conference, and at an EHSRC Science Café in Fairfield Iowa. The Center was also a co-sponsor of Challenges to Providing Safe Drinking Water in the Midwest: A Symposium held at Drake University and the Iowa Environmental Council's Annual Conference. CHEEC staff were also interviewed by investigative report Mark Shapiro for an article on water quality issues in Iowa. The article from Mark Shapiro can be found here: https://e360.yale.edu/features/in-the-heart-of-the-corn-belt-an-uphill-battle-for-clean-water-iowa.

Education grants

CHEEC also provides support to the State Hygienic Laboratory and Iowa State University's Extension and Outreach 4-H Program. These efforts aim to increase awareness about the possible presence of arsenic in private well water and increase the number of wells tested. The project created materials and sessions to teach youth about arsenic contamination in private wells, its health risks, and the process for detection and treatment. The educational program was an extension of the State Hygienic Laboratory's Iowa Well Survey (IWS) program, which was conducted in 15 counties. A video created for this project (Figure 2) can be found on CHEEC's website at https://cheec.uiowa.edu/outreach/resources.

FIGURE 2.
Screenshot of informational video on arsenic in private wells produced by SHL with support from CHEEC. The video can be found on the CHEEC website at: https://cheec.uiowa.edu/outreach/resources.

Student Training

Since 1989, CHEEC has supported hands-on learning opportunities for undergraduate and graduate students to enhance their educational experience and to prepare them for their careers.

To date CHEEC supported research projects have supported **over 70 students** to obtain graduate level degrees.

In 2018, the Center established an annual graduate fellowship program that will provide further opportunities for students in Iowa to gain practical experiences in Environmental Health research. The inaugural CHEEC graduate fellow is Mr. Muhammad Sit, a second year Masters student in Computer Science at UI working on hydroinformatics research at IIHR — Hydroscience & Engineering. With CHEEC and the Iowa Geological Survey (IGS), Mr. Sit is working to develop an automated groundwater well forecasting system (Figure 1). The system would enable Iowans to predict aquifer depths and anticipate aquifer water quality for dug wells anywhere in the state. The project is using existing datasets available through CHEEC and IGS.

In June 2018, CHEEC established an annual internship program with the State Hygienic Laboratory (SHL). Similar to the fellowship program, this program provides 3-6 month practical experiences in using laboratory methods at SHL to investigate environmental health issues. Sarah Douglas, a second year masters student in Civil and Environmental Engineering, will work with SHL to identify the major harmful algal bloom toxins (e.g., microcystins) in Iowa by analyzing samples from the State Beach Monitoring Program. Data collected will be used to develop a rapid strain identification test and a cyanobacteria library. Findings from this study will help facilitate environmental risk management and develop mitigation strategies to reduce human and animal health risk.

FIGURE 1.
Screenshot of groundwater well forecasting application developed by CHEEC graduate fellow Muhammad Sit. Using the characteristics of existing wells (yellow dots on map), the depths of aquifers at the proposed location (red pin on map) can be estimated.
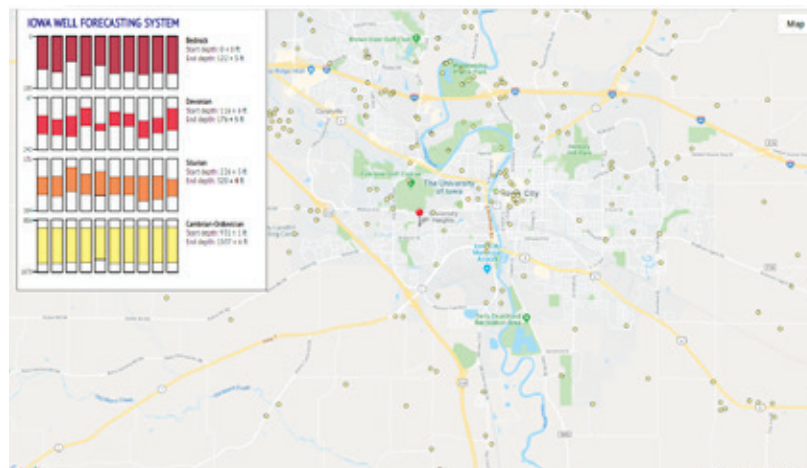
CHEEC

Plans for FY2019

In the upcoming year, CHEEC has received approval from its Executive and Advisory Committees to work on several new initiatives intended to improve the environmental health of Iowans. CHEEC is currently developing a **data visualization platform** to display data related to the source, treatment, and quality of drinking water in all Iowa communities. The visualization platform will be publicly accessible, and increase the availability of CHEEC maintained databases to diverse stakeholder groups. In partnership with IDPH, CHEEC is conducting an **analysis of the Grants-to-Counties program**, which provides financial support for the testing, maintenance and plugging of private groundwater wells in Iowa. This effort will produce a report with recommendations and best practices for counties to better utilize funds from the Grants-to-Counties program and minimize the public health risks of their private well owners. Finally, CHEEC will initiate a pilot program for **testing and rehabilitation of lead in Iowa elementary schools**. Working in coordination with several state and county-level organizations, CHEEC will facilitate the sample collection and testing for lead and copper in elementary school drinking water, and in cases of lead and/or copper detection, provide financial assistance to schools to help remedy the source of contamination.

Who We Are

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