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Doug Farquhar
Program Director for Environmental Health
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“The new public health service needs the contribution of an effective environmental health workforce at national and local levels”

Case for Environmental Health, CIEH October 2010

The Chartered Institute for Environmental Health (CIEH) promotes the practice of environmental health services through continuous training, professional accreditation and strongly advocating the need for environmental health before the national and local policy makers in England, Northern Ireland and Wales. The Public Health Service in the United Kingdom (UK), being the costliest item in the UK’s budget, is under extreme pressure to reduce its costs. CIEH provides the evidence that demonstrates how environmental health practitioners protect the public from the filth, vermin and disease that cause acute illness. Without environmental health, public health costs soar. By tackling filth, environmental health keeps the country safe.

Through a sabbatical sponsored by the National Environmental Health Association (NEHA) I received the opportunity to learn about environmental health in the UK, mainly in London and a short time in Edinburgh. Spending the month of April 2011 in the UK, I toured the boroughs of Croydon, Chelsea and Kensington, Southwark, Wandsworth and Westminster, and the cities of Edinburgh and Coventry, learning about food safety, garbage collection, sanitation, dampness, wastewater and housing conditions. I learned about the delicate infrastructure that allows the upscale restaurants of Westminster and Chelsea to operate sanitorially. I learned that neglected housing leads to chronic illness. I saw how cultural norms violate environmental health practices. I learned how London and Edinburgh were transformed from overcrowded, cesspool ridden dens of disease to modern, healthy cities.

Overall, I learned about filth.

Environmental Health is the study of filth. Of sewage. Of refuse. Of slaughterhouses. Of overcrowding. Of disease. People lacking access to clean water, fresh food and sanitation. And the infrastructure that keeps a community free from filth requires funding and support. No human habitation is free from filth. It is a part of the human condition. The larger the habitat, the more complex the system needed to keep the people safe from filth.

UK Environmental Health Practice
The UK views environmental health differently than in the U.S. In the UK it is a profession, with university course work and degrees in environmental health, certification as an Environmental Health Practitioner, continuing education, and professional associations to maintain the credibility of the practice (CIEH in England; the Royal Environmental Health Institute in Scotland). Certification is necessary before a person can be employed as a food inspector, housing inspector or sanitary engineer. The professionalism of the practice garners respect from the community, encouraging the private sector to follow the guidance and direction from the environmental health community.
Environmental health is closely linked to the Public Health Service, the UK’s national health program. The government provides health care for all citizens, free of charge. It makes public health more of a concern for the UK than in America, because the government ultimately must pay for all health conditions. If a person chooses to smoke the government pays for his healthcare. If a person is obese the government pays. If a person becomes sick from food poisoning, the government pays.

Therefore there is an interest by Parliament and the local councils towards public health. A healthy population leads to a less costly national health service. And environmental health practitioners are at the frontline of the public health workforce.

But as in the U.S., environmental health is being sieged by budget cuts and restrictions. The global recession is forcing public sector austerity, with only critical services being supported. Environmental health is making its case that it is essential to public health, keeping the country free of disease and illness. Unless it can make its case that it is indispensible to the decision makers, environmental health in the UK, like in the U.S., will suffer savage cuts.

**Environmental Health in UK**

England’s Chief Medical Officer once recognized the environmental health officer as the only health practitioner in local government. Environmental health practitioners are considered an integral part of the frontline workforce of the Public Health Service. They are the officials the food service sector sees ensuring that food is properly handled and cared for, that the establishment is sanitary, that the facility is maintained. House and homeowners receive guidance on how to maintain their properties in a healthful condition from environmental health practitioners. Business owners are directed on how to keep their properties sanitary. Planners learn how to design healthier communities from environmental health practitioners. Epidemiologists traced back outbreaks through the environmental health infrastructure.
This respect for the environmental health community comes from a long history of dealing with filth in England. London was the first large city in Europe; larger than Rome, larger than Paris. Its population soared to close to 100,000 by 1300, being overrun with serfs escaping their feudal lords. But it was designed as a small Roman village, not a large metropolis. Vendors selling their wares on the street level of a medieval London building threw their garbage into the streets. Butchers tossed the waste parts of pigs, sheep and cattle into the streets, relying on dogs and vermin to eat the remains. Chamberpots from the second and third floor flats were thrown into the streets, adding to the squalor. Cesspools overflowed, and when it rained, the city became one giant sewer. Lawsuits were filed to force neighbors not to release the contents of their privies into their neighbor’s basements. Life expectancy was barely 30 years, which was half the expectancy for common English villager. London became so unpleasant that Parliament threatened to move rather than live with the stench.

It is from these beginnings that environmental health emerged. One of the first public jobs was street cleaner. A man could earn 13 pence a day carrying garbage from the London city streets and dumping it in the Thames. Much later, after the garbage of London extended the city into a channeled Thames, city officials determined that a filthy Thames was no healthier than filthy streets. John Snow determined that the Broad Street pump was laced with cholera, and disease was linked to clean water. London embarked on a massive engineering enterprise to drain sewer water to a common area for cleaning before being pumped to the Thames.

Exact Location of the Broad Street Pump, in front of the John Snow Pub in SoHo. The pump was popular because the water was crystal clear and appeared clean.

Other British cities were no better. Edinburgh limited access to the public water fountain. Residents could only get water between midnight and 5 am, meaning people did not waste water by washing. The Glasgow slums became famous in the 1880s as ‘the filthiest place in Europe.’

From these beginnings emerged the environmental health practice in England. Professional sanitation workers cleaned the streets. Engineers designed sewers and water systems. Garbage was collected and disposed. Food started being inspected, beginning with the ‘sniff’ system for meat that is still practiced today (at least in the U.S.). The slums of Glasgow were cleaned up. The city of London stopped dumping garbage and raw sewage into Thames.
In short, environmental health made London, Glasgow and Edinburgh (and all other large cities) habitable. Without it, they become unlivable cities of filth, not attracting people and business but repelling them.

Environmental Health Policy (CIEH and REHIS)
It is from this background that environmental health has emerged. It takes governmental policy to maintain these standards of cleanliness. Environmental health requires a communal response; individual efforts are ineffective without the entire community participating in sanitation.

Through the work of CIEH in England, Northern Ireland and Wales, and the Royal Environmental Health Institute of Scotland (REHIS) in Scotland, policy makers know and understand the importance of environmental health.

CIEH, as the lead environmental health association in the UK, has invested heavily in policy. With a team of 10 staff lead by a former member of Parliament, David Kidney, the CIEH Policy Team has a mandate to develop policy and practices in all areas of environmental health. CIEH directs this team to:

- Develop and represent policy and practice to external agencies, including the central government;
- Engage in dialogue with decision-makers, regulators whose activities affect CIEH members (such as the Health & Safety Executive and Food Standards Agency) and other professional organizational partners;
- Promote environmental health at European and international levels;
- Being a liaison to other professional bodies and non-governmental organizations;
- Speaking at conferences and seminars;
- Responding to members’ inquiries; and
- Prepare responses to consultation from the UK government and others.

The team works closely with the CIEH educational team and the marketing staff, to highlight current policies and address upcoming policy needs. They provide research on environmental health, gathering data on various issues to assist members in making their case to decision makers, and providing information on the state of the profession at the national level. They look towards future concerns, planning and strategizing policy responses to address these needs. The policy team is CIEH’s primary source of expertise on all matters related to environmental health.

It is under this rubric that the policy team operates. They define their role under five themes:

- **Advocacy, information and resources for members** – work to provide members and partners with information to build an understanding of environmental health to influence decision makers;
- **Public Health in the widest sense** – including wellbeing, personal health and hygiene, mental health and reducing health inequalities;
- **Public protection** – encompasses regulatory work, including regulation from the perspective of the regulated and the regulator, education, information and advice, setting standards and incentivizing compliance with safety laws, regulations and standards;
- **Research and development** – using the current base of research, enhancement of that base and identification of new policies to build the practice of environmental health;
• **Sustainability** – is embedded in everything the policy team does, to further develop the profession and integrate environmental health into emerging issues.

The goal of the Policy Team at CIEH is to ensure that government and decision makers rely on CIEH to provide current, relevant research and data to advance the practice of environmental health.

REHIS
Scotland has its own environmental health organization, REHIS, which provides similar services. Though its policy staff is not as developed as CIEH, its charter lists one of its top priorities is to ‘liaison with government and other bodies regarding Environmental Health.’

Parliament recently granted autonomous status to Scotland (as well as Northern Ireland and Wales) which allows the Scottish Parliament to determine many decisions regarding environmental health. REHIS acts as the liaison between Parliament and the environmental health community. Because Scotland is now responsible for providing health care to its citizens, environmental health needs are now encompassed within the Scottish government.

Scotland recently drafted a plan to address environment and health, entitled ‘Good Places, Better Health.’ This report defines a strategy based on the fact that a person’s environment determines their health and wellbeing. REHIS has used this report to highlight how investing in environmental health promotes good health. They stress how redeveloping communities can improve people’s health, how litter, noise and a lack of security can affect the mental health of residents in a community.

The Scottish Health implementation plan notes:

> [E]nvironmental health has been represented by approaches which delivered public protection but failed to provide the necessary solutions for the future. This plan...configures environmental health activities for a new public health era, significantly enhances mechanisms through which evidence in its widest sense will be gathered, implements new structures for robust evaluation and gap analysis and provides mechanisms for hard wiring what we learn and what we know, to what we do.

*Good Places, Better Health, The Scottish Government, 2008*

To enable Scotland to meet this ambitious goal requires a significant and directed effort by REHIS to provide the data and infrastructure to meet future needs.

UK v. US Environmental Health Policy
REHIS and CIEH’s effort to address policy is much more aggressive than I witness in the U.S. Policy is integrated in almost every aspect of their work, and I paid particular attention to policy as I toured with environmental health practitioners in several boroughs.

The tours included visits on healthy housing (the Housing Health and Safety Rating System, or HHSRS), food safety, importation of food, waste disposal and the practice of environmental health in the boroughs of Croydon, Tilbury, Chelsea and Kensington, Wandsworth, Westminster, in addition to insights on Liverpool from Peter Wright and the HHSRS from David Ormandy at the University of Warwick. I also received the opportunity to tour the Scottish Parliament in Edinburgh.
The majority of my time was spent learning about housing conditions in England and the policy decisions designed to improve the health of residents in housing. Of the 18 million homes in England, 1.5 million are considered ‘unfit,’ according to the HHSRS. Most of the unfitness comes from ‘coldness,’ basically because a majority of homes were built with inadequate heating. Coldness causes a reported £9.3 million to the National Health Service (NHS) in sickness and disease, whereas remediation of coldness would cost only £2.5 million. A report by David Ormandy (and others) identified the total cost of unfit housing was £17.5 billion. If all these health concerns are addressed, the NHS would save £600 million annually. The policy team was exploring how to highlight this information for policy makers, who were in serious discussions on severe budget cuts (to both the NHS and environmental health).

Other features of unfitness included falls, dampness and mold, overcrowding, security (feeling safe in a home). Falls cost the NHS £30 million. Dampness costs £495 million; overcrowding £16 million. Each of these features was discovered via the development of the HHSRS.

David Ormandy of the University of Warwick explained the system to me, and the unique situation that lead to it becoming policy. The HHSRS is the intersection of law and health, using policies to counter a serious health risk.

In England, as long as housing was ‘habitable’ (or ‘tolerable’ in Scotland), then the housing was considered fit. These terms were undefined and applied haphazardly depending on the situation and jurisdiction. Considering the amount of time people spend in homes, ignoring the adverse health conditions was illogical. Resources were spent on the health of the building, not the health of the occupants of the building. David and his colleagues researched housing habitability standards, discovering that the American Public Health Association (APHA) had drafted a report entitled “The Basic Principles of Healthful Housing” in 1938, which offered a basic primer on healthy housing.

From this primer they devised a rating system based on the severity and likelihood of an adverse health condition in a home. APHA discussed how housing impacts the physical and mental health of its occupants, how conditions lead to both severe (falling down stairs) and less severe (burning hands on stove) outcomes, based on the occupants vulnerability to the condition.
In England, building codes were adopted using the standards put forth by Edwin Chadwick in his 1850 health report, and David originally thought that a revision of building codes was warranted. But in working with staff from Parliament, healthy housing took a different approach being revised into a health hazards rating system. The system identifies 29 hazards with 7 classes of conditions, which are implemented by every local environmental health officer in the country.

**Classes 1 – 4** the housing condition will cause the occupant to receive medical attention, which is documented by the NHS. Local environmental health authorities must act on housing classed 1 – 4. **Classes 5 – 7** cause hazards, but will not likely involve medical attention. For these classes the environmental health officer can provide guidance, but no enforcement action.

Hazards fall into different classes based on the vulnerability of the occupant (i.e., hazardous stairs are classified as more dangerous in homes with elderly occupants) and the likelihood of an incident (if a unit is overcrowded with a kitchen, burns are more likely to occur.)

CIEH was able to secure visits and tours to 3 boroughs on healthy housing. In addition, Peter Wright sent me materials about Liverpool’s program on healthy housing. (Due to time and budget, I was unable to visit Liverpool).

**Croydon**

Peter Brown, the environmental health practitioner in the borough of Croydon, invited me on a healthy housing inspection in his borough. Croydon has 340,000 residents living in 118,000 homes. Most are owner-occupied, but 16 percent are rental, and 54 percent are considered ‘non-decent.’ Coldness is the greatest health hazards, with a majority of homes lacking insulation and proper heating. (They are seeking to use a £100,000 weatherization grants to make homes warmer).

The borough prioritizes its interventions, only citing homes with several complaints. Visiting a rental home with obvious structural damage, the borough cited the owner and paid for the hazard to be fixed. The borough will then charge the owner 130 percent of the costs of repair. The charge pays for the borough’s overhead plus provides an incentive for owners to perform the work themselves, instead of waiting for the borough to act. But the hazard was a clear violation of the HHSRS, because of fears that someone may be injured if the window lintels were to fall to the street below.

The second home had several complaints from the tenants about dampness and lack of smoke alarms. Although the property was in poor condition nothing in it warranted a class 1 – 4 hazard, so the inspector could only issue guidance to the owner. Unless the inspector can actually see the hazard, the borough cannot take action.
Residence in Croydon. The lentils above the windows were structurally damaged. The borough will correct this danger and charge the property owner.

Croydon has a unique problem. Croydon is home to the British Immigration Center, meaning all immigrants must come through Croydon. Many stay and settle, placing additional pressure on the environmental health officers who must work with these culturally diverse communities.

However, a majority of the new residents in England are from the EU. When the EU adopted the policy of free movement for all workers in member countries, the British government estimated maybe 40,000 new immigrants would arrive to work, mainly from Poland. Over 1 million came from Poland alone, with another 100,000 coming from Lithuania. Persons emigrating from Commonwealth countries, however, do not have the same freedom of movement.

Chelsea and Kensington
The borough of Chelsea and Kensington is an upscale area near Hyde Park. Many of the homes are Victorian Manor houses, awkwardly converted into apartments. Many residents share bathrooms, and sewage systems are often placed on the outside of buildings, rather than through the walls. Some apartments are only a bed; no kitchen or bathing facilities.

But the demand for these units is high, with one person selling a walk-in closet for £600,000. The environmental health inspector is sometimes reluctant to take action, because most HHSRS problems are in houses serving the lower income community. Rather than paying for units to meet the HHSRS, it is easier for the property owner to sell the property. Many low income residents face eviction or rate hikes which they cannot afford.

The environmental health officer sought a different solution. Rather than imposing the HHSRS, he chose to work with the tenants and owner to update the units to make them safe, but not cost prohibitive. This required support from both parties, meaning the tenants had to be as committed to undertake...
actions as much the owner. But the officer found this approach more productive than simply enforcing compliance with the HHSRS.

Wandsworth
Tim Bage is the environmental health officer who introduced me to Wandsworth, which is a borough Southeast of London near Wimbledon. A major Brownfields redevelopment is occurring along the Thames, with a promise of the U.S. Embassy moving its office to this Wandsworth redevelopment.

Many of the homes were built for the upper middle class in the 1870s, with many parks and open spaces. It has become a trendy area, with fewer families and more singles and couples. Units are being redeveloped to house 3 couples instead of one family, which often causes difficulties and HHSRS hazards. But with some guidance the owners or occupiers learn to address these hazards.

The area has a very active nightlife and a diverse food environment. Several of the restaurants serve cuisine from developing nations, following those food safety protocols instead of UK standards. These restaurants keep the environmental health staff busy.

Wandsworth is also home to one of the most congested (and therefore, polluted) streets in London. The street is narrow with high buildings and lots of truck traffic, providing an excellent opportunity to gauge air pollutants. The environmental health officers set the air monitoring stations, collecting data to show the EU that England is lower its emissions and carbon footprint. If England fails to lower its emission levels, it will owe £500 million to the EU in carbon taxes. The country is working hard to reduce its air emissions.

Air Monitoring Stations in Wandsworth

Liverpool
Peter Wright introduced me to Liverpool. Liverpool is a declining city, losing almost half its population since 1950. It has a much higher rate of white British—75 percent—than in London, but also much
higher health inequities and a lower life expectancy. A quarter of all homes are poor; 45 percent of children and 29 percent of the elderly live in income-deprived homes. Inadequate housing causes over 500 deaths and 5000 hospitalizations annually. The Council owns no housing stock.

Against this background Liverpool adopted the Healthy Homes Program in 2009. The program addresses health inequities and housing disrepair, primarily coldness, falling on stairs and falling accidents. Using £1,000,000 of private funds the program seeks to create a sustainable, healthy housing stock that protects public health and enhances community well-being.

Since the program began it has visited 3594 homes, surveying 2272 leading to 664 environmental health inspections and actions. By engaging the community, the program was able to work with 4420 residents, many with children, or elderly, or disabled, or another vulnerable population, to assist them in reducing coldness in their home, repairing dangerous staircases or landing to limit falls, enlightening them on alcohol abuse and obesity, and tackling fuel poverty. They took a holistic approach, focusing on health literacy and a variety of health hazards, from mold and dampness to poverty.

Through this small program with limited funds the city saw 1000 fewer hospitalizations and 100 fewer deaths, saving the NHS £1.5 million a year. The success of the program led the Chief Medical Officer to award it the Public Health Award of 2010. The Council is seeking to expand the program, requiring landlords to become ‘accredited’ in housing standards.

Food Safety
The second major topic I explored was food safety. With the advent of the Food Safety Modernization Act in the U.S. forcing changes to food safety laws, I was interested in how food safety is addressed in the U.K.

Food safety is very similar in both countries. Both countries require food establishments to adopt a HACCP system, to ensure food remains uncontaminated throughout its lifecycle. Food establishments must document their procedures which permit inspectors to ensure that food preparation and handling is maintained in a proper manner.

England (through the advocacy work of CIEH) initiated the ‘Scores on the Doors’ program, which is a pilot project to have a 5 star rating system that is posted on the door of restaurants and food establishments. The EH inspector assigns a score, giving the proprietor 3 months to fix any hazards. After that time the rating is posted. At present it is only a pilot project, but plans are to take it nationwide.

CIEH estimates that there are 700,000 food premises in the UK, with 60 percent being caterers. A majority of establishments have less than 4 employees, and 87 percent employ less than 9.

Where the UK differs from the U.S. is in its relationship to the European Union (EU). The EU has sought an open market among EU countries for all goods, including foods. This means that food safety standards and policies are adopted by the EU, and implemented by the member nations. Although the EU recognizes local authority, the essential policies and practices are imposed by Brussels.

The UK adopted the General Food Law in 2002, taking into account EU procedures. The law provides for traceability of animal products, official control on food and feed, hygiene standards for foods. Local authority can impose both civil and criminal charges, including corporate manslaughter. (Recently the
corporate manslaughter charge was imposed on a Scottish butcher who severely violated food handling procedures and poisoned several customers.)

Southwark
The environmental health officer in Southwark took me on a food inspection tour of the café at Price Waterhouse Cooper and the Borough Market. Southward borough lies on the south bank of the Thames, across from St. Paul’s Cathedral, and is home to the Globe Theatre and CIEH. It has some of the oldest establishments in London, though was not considered a part of London. At Price Waterhouse he spoke to the café manager, giving guidance on how to properly maintain the HACCP records and food temperatures. It was a small operation, serving only the staff at Price Waterhouse at breakfast and lunch, and was kept clean and organized. But still, the officer identified a few food safety concerns.

The officer talked about the difficulty of explaining UK food safety standards to the diverse cultures found in Southwark. Many people come from the developing world without the knowledge or appreciation of food safety, nor an understanding of how London sanitation operates. One restaurant was storing food near an unused toilet, which allowed rats and vermin to enter the restaurant. Another did not appreciate refrigeration of meats, preferring to let sunlight ‘soften’ the meats.

We took a walk through Borough Market, which is a farmers’ market open on the weekend. A cheese shop was open for a visit. The officer mentioned that the soft cheeses spoil, but some of the hard cheddars had been available for sale for 20 years.

Cheese Shop in Borough Market

Westminster
The borough of Westminster lies just to the west of the London borough, with the Parliament building and SoHo (the location of the John Snow Pub) within its borders. Like Chelsea, many of its restaurants were upscale establishments located in tight surroundings. Retail space is limited, meaning food establishments operate with small kitchens. Garbage is collected at specific times; owners have a half hour window to place their garbage on the curb for pickup. Otherwise, it must be stored in the restaurant.

Many ethnic restaurants have trouble meeting the food safety requirements, in particular Chinese restaurants. The media ran articles on the numerous violations and closures they suffered, saying the
‘Chinatown restaurants in hygiene hall of shame.’ The borough decided to reach out to the restaurants, inviting the managers and staff to a series of informal meeting to discuss hygiene and food safety practices. Most of the restaurants wanted more inspections by the officers, and they wanted simple, precise, and in Mandarin, compliance reports. By changing their inspection style and outreach, the environmental health officers now are welcomed by the Chinese community, who are much more aware of food safety concerns.

David Hine from the food safety team took me on a tour of a French Restaurant and a Starbucks. He made a point to meet with the head chef (instead of the manager) who had a better sense of the day-to-day operation. The restaurant ran in a very tight space, with little room to maneuver, forcing the chef design a very precise system to operate the restaurant. Garbage was kept in a part of the kitchen away from the customers; cold prep was in the basement, hot prep upstairs.

The Starbucks visit was a follow-up to a workplace accident a few weeks prior. An employee while cleaning the coffee pots scalded herself, requiring her to take to time off. The manager used this incidence to change their HACCP procedures to avoid future accidents, which he recommended to Starbucks’s corporate offices.

Another interesting point about Westminster (and all of central London) is that cars are charged a fee to enter the borough. And parking is exorbitantly expensive, meaning no one drives into central London unless they are desperate or rich. Most people travel by taxis, buses, subways or foot. The inspections in both Southwark and Westminister occurred on foot.

**Trade Policy**

Another interest of mine is trade policy. This visit offered a fascinating visit to the Port of Tilbury, far east of London, where many ships with international food cargo are unloaded. CIEH was able to secure a visit with a group of students for me, with the environmental health manager John Ambrose.

The port is several miles outside of London on the Thames. Product coming in from the EU was not inspected, presumably because they follow the same food safety standards as Britain. Product coming in from the British Commonwealth was inspected, as was product from the U.S.

The EU policy is 20 percent of food products coming from non-EU countries must be inspected. The manager showed the students how the inspectors will look at 20 percent of the containers, open them
up, move the product around to get a representative sample, then reseal the container for distribution. (The U.S. standard is 1 percent of containers are inspected in such manner.)

Certain products from specific countries are inspected less, after that country lobbies the EU for special status. New Zealand received a special status for its lamb, with only 2 percent requiring inspection. No beef from the U.S. is allowed in the UK because of the beef hormone controversy, although they do allow other meats from the U.S.).

The EU inspection policy was adopted in the UK in 2004. This policy gave primacy to the EU, leaving the UK environmental health officers the responsibility of implementation. The EU requires all meat be inspected by veterinarians, and because Spain has a glut of veterinarians, most meat inspectors are from Spain.

EU requires that ‘all food must be safe.’ Local authorities must be able to take civil and criminal actions, but criminal actions must be based on EU law. The EU imposes strict liability; public health overrides private confidentiality.

Conclusion
The 2011 NEHA Sabbatical gave me insight into the practice of environmental health in the UK. I gained a sense of how policy affects environmental health, and how environmental health affects health and wellbeing. Adopting policy and engaging policy makers has been critical in the ‘professionalism’ of environmental health in the UK, incorporating it into core institutions in that country. Having university course work in environmental health, accreditation of environmental health practitioners, requiring continuing training and siting environmental health officers in local government all enhance the profession.

I also gained insight into the political structure of the boroughs, cities and national parliaments, which I did not discuss in detail. But this sabbatical provided me an opportunity to learn how the borough councils are elected, how many members sit, and how the boroughs relate to the greater London Council. In Scotland I learned about how this country, gaining self-rule for the first time in 300 years, is managing environmental health in light of budget constraints and citizen pressures.

Moreover, I gained an appreciation of the tireless effort that must be undertaken to keep a modern city functioning in a safe, healthful manner. Disease and illness from unsanitary and unhealthy conditions is a much greater threat than form most chronic diseases, yet the infrastructure necessary to keep humans safe from such environmental health threats is under attack. Whether the national and local governments in the UK or in the U.S. decide to maintain this infrastructure and at what level of maintenance will determine the health outcomes of future generations.