



# Environmental Health Curriculum 2011 – ‘Synopsis’

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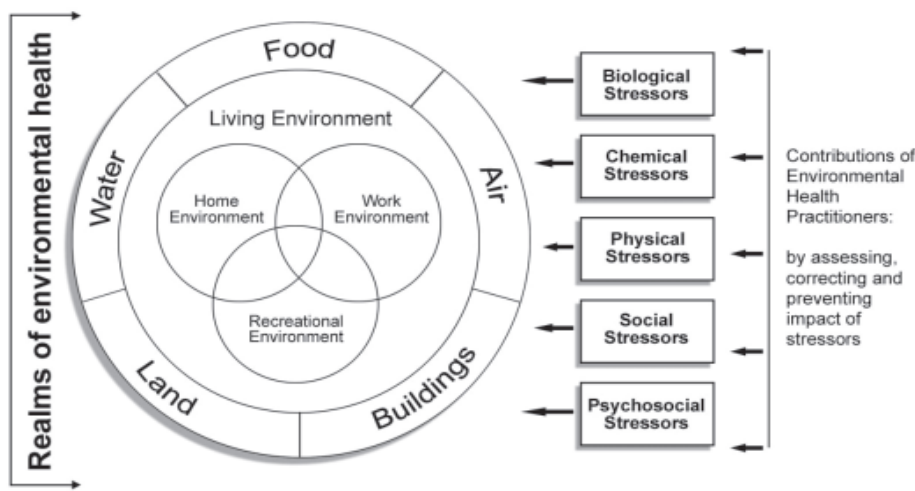
## The Development of the Curriculum

For a profession that can trace its history so far back, we see reflected in our education and training of practitioners the changing panorama of public health across three centuries. However, we have much benefitted in the establishment of an Environmental Health 'curriculum' fitted for the modern era, by the wisdom of commentators who have challenged the orthodoxy.

In 1997, when we sought to establish our first 'new' curriculum, it was the Environmental Health Commission's *Agendas for Change* which warned of the consequences of pursuing an unchanged approach to problems. In calling for a move away from the purely technical, and towards a paradigm that admitted the causal inter-relationships between Man and his environment, *Agendas for Change* remains a landmark in our professional development.

For the authors of its successor, the 2003 Curriculum, a more potent influence still emerged from the Health Development Agency's *'Environmental Health 2012 - a key partner in delivering the public health agenda'*. [Burke S, Gray I, Paterson K and Meyrick J (2002), *Environmental Health 2012 – a key partner in delivering the public health agenda*, Health Development Agency] For them, the direction was established by the HDA's application of the schematic that Ian McArthur and the late Xavier Bonnefoy developed from the WHO definition of 'Environmental Health' [MacArthur, I and Bonnefoy, X (1998), *Environmental Health Services in Europe 2 – Policy options*. WHO regional publication, European series No. 77, WHO Regional Office for Europe, Copenhagen] which provided the curriculum's enduring conceptualization of Environmental Health in terms of the impact of the five classes of 'stressor' – biological, chemical, physical, social and psycho-social – on Man's living, working and recreational environments.

### A conceptual model of Environmental Health (Burke et al, 2002)



However, perhaps the greater service of this document was to question whether the Environmental Health Practitioner was making the contribution to health that they could and should, whilst remaining so focused on the regulatory function. 10 years on and the question remains; however, after a period when regulatory enforcement seemed likely to prevail, a call emerged for the re-affirmation of the 'disease preventing – health promoting' role of the 'generalist' EHP. In this respect it mirrored a new WHO definition of Environmental Health as being: '*...targeted towards preventing disease and creating health-supporting environments*' [World Health Organisation (2010), Definition of Environmental Health 2010, available from: [www.who.int/topics/environmental\\_health/en/](http://www.who.int/topics/environmental_health/en/)]

Finally, the authors of 'Curriculum 2011' have been keenly aware of the situation regarding the forthcoming transfer of the public health portfolio to local authorities. We, as a profession, must ensure that our practitioners can make the very best of this opportunity, whilst retaining our commitment to protecting health through conventional technical interventions. Accordingly, the public health objectives set out here in the 'Synopsis' (and in the Portfolio of Professional Practice) owe much to the 'Public Health Skills and Career Framework' (April 2008, revised March 2009) where they are purposefully mapped to 'Practitioner' level ('Level 5')

## **Cognitive Development in Students and Subjects**

An EHP must be able to make sense of complex situations and to arrive at judgments that are rational, transparent and defensible. 'The Reflective Practitioner', as developed by Donald Schön [Schön, D (1987), *Educating the Reflective Practitioner: towards a new design for teaching and learning in the professions* in Eraut, M (1994), *Developing Professional Knowledge and Competence*, Falmer Press, London. Schon DA (1995), *Knowing-in-action: the new scholarship requires a new epistemology*, *Change*; November/December: 27-34] characterized a practitioner that progresses from 'knowing in action' to 'reflecting in action' and this has been influential in developing both the curricula over the years and setting the accredited degree programme and training into the context of the 'route to qualification' .

A student's cognitive development and progression should also be in line with the principles set out in Bloom's 'Taxonomy Pyramid' and 'Table of Cognitive Progression' [Bloom, B S (1956), *Taxonomy of educational objectives: the classification of educational goals by a committee of college and university examiners*; Handbook 1, Longman, New York quoted in International Faculty Forum of Environmental Health (2010), *Developing an International, Competence-based, Curriculum for Environmental Health* (Report to the IFEH Council Meeting, Vancouver (4<sup>th</sup>/5<sup>th</sup> Sept 2010))] which has helped shape the 'journey' our students embark upon, whether they follow a Bachelors or Masters programme.

## Bloom's table of Cognitive Progression (Bloom 1956)

Competence	Skills Demonstrated
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>- observation and recall of information</li> <li>- knowledge of dates, events, places</li> <li>- knowledge of major ideas</li> <li>- mastery of subject matter</li> </ul> <p><i>Question Cues:</i>            arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce state.</p>
<b>Understanding</b>	<ul style="list-style-type: none"> <li>- understanding information</li> <li>- grasp meaning</li> <li>- translate knowledge into new context</li> <li>- interpret facts, compare, contrast</li> <li>- order, group, infer causes</li> <li>- predict consequences</li> </ul> <p><i>Question Cues:</i>            classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate,</p>
<b>Application</b>	<ul style="list-style-type: none"> <li>- use information</li> <li>- use methods, concepts, theories in new situations</li> <li>- solve problems using required skills or knowledge</li> </ul> <p><i>Questions Cues:</i>            apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write.</p>
<b>Analysis</b>	<ul style="list-style-type: none"> <li>- seeing patterns</li> <li>- organization of parts</li> <li>- recognition of hidden meanings</li> <li>- identification of components</li> </ul> <p><i>Question Cues:</i>            analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.</p>
<b>Synthesis</b>	<ul style="list-style-type: none"> <li>- use old ideas to create new ones</li> <li>- generalize from given facts</li> <li>- relate knowledge from several areas</li> <li>- predict, draw conclusions</li> </ul> <p><i>Question Cues:</i>            arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write.</p>
<b>Evaluation</b>	<ul style="list-style-type: none"> <li>- compare and discriminate between ideas</li> <li>- assess value of theories, presentations</li> <li>- make choices based on reasoned argument</li> <li>- verify value of evidence</li> <li>- recognize subjectivity</li> </ul> <p><i>Question Cues:</i>            appraise, argue, assess, attach, choose compare, defend estimate, judge, predict, rate, core, select, support, value, evaluate.</p>

# The Curriculum Learning Objectives

The learning objectives of an accredited programme have been grouped under four headings:

1. Fundamental principles and underpinning knowledge
2. Intervention strategies and operational skills
3. Practice skills in each intervention field
4. Core competencies

Universities are not required to deliver the objectives in any particular sequence and are encouraged to design a programme in a way that best suits them and their students.

## 1. Fundamental Principles and Underpinning Knowledge

Programmes should provide students with a sound general knowledge of the natural and human-made worlds and their systems. They should establish the context in which different stressors impact on humans and how this requires environmental health intervention, specifically:

The natural world of Earth and the its key biological and ecological systems, especially those that may be affected by humans for good or bad, thus developing a detailed awareness of the implications to the sustainability of the Earth's resources arising from their indiscriminate use, and an understanding of their impact on the climate and health.
The human world as it is manifested in our urban communities, human made structures (homes), industry and services, and, inter alia, students should be introduced to typical forms of building construction encountered in the UK, together with the technology employed in heating, hot-water systems, lighting and ventilating, and have at the completion of their training an understanding of common housing defects.
The ways in which our social, cultural, emotional and psychological worlds are ordered and explained, recognising how the irregularities and inequalities that are so mediated are played out in terms of health.
The concepts of 'health' and 'disease', and how these might be measured, assessed and articulated, exploring the principles of, and strategies for, health protection, health promotion and health improvement.
Introduction to the concepts of 'hazard' and 'risk', with particular reference in the earlier stages of the course of how 'risk assessment' serves to identify and characterise hazards and establish the risk, explaining why this must be accomplished ahead of considering risk management strategies.
The nature of governance in the UK, taking this through from the role of central government (and the governments of the devolved countries of Northern Ireland, Scotland and Wales) as the Legislature informed by its civil service and others, thereafter discharging its responsibilities through departments of State, non-ministerial agencies and non-governmental organisations, through to local government.

The nature of the Legal System pertaining in each devolved country of the UK, and the jurisdiction of the courts in discharging the criminal and civil law, thus establishing the means by which judge-made law complements Statute.
Encouraged (through exposure to published work performed across the environmental health field) to appreciate why research forms such a vital part, as in all other fields, to our better understanding of 'stressors' at a fundamental level and informs practice through the establishment and reinforcement of the evidence-base.
Through frequent opportunities to practice different forms of communication, acquire the high standards of communication skills expected of an EHP in drafting reports, briefing notes, letters and other forms of written exchange, as well as to prepare and present oral presentations.
An introduction to the biological, chemical, physical, social and psycho-social stressors based on the realms of environmental health model; how individually, and/or collectively the stressors may impact on the home, work and other environments; the interface between the stressors and these environments through air, water, food, land and buildings, and the mechanisms involved: concluding with the nature and extent of their health impacts on the individual, and the impact at community and population level.

Thereafter programmes will seek to explore particular fields of professional engagement, many vital to the process of identifying hazards, elucidating risk, assessing risk and interpreting compliance against standards, guidelines and other legislative tools. Those deemed 'key' are:

The impact on health arising from poor nutrition, alcohol and drug misuse, exposure to sexually-transmitted diseases, lack of exercise and the range of mediating factors that impact on the likelihood and severity of outcome.
The principles of microbiology as they relate to our understanding of health, disease, hygiene and food technology.
The fundamentals of mammalian anatomy, physiology and how the function of tissues and organs can be disrupted by biological, toxicological and mechanical effects.
The features of geography and meteorology that have an impact, directly or indirectly, on health through variations in weather and acute impacts and climatic changes that long-term, permanent changes to our eco-system.
The technological features of house construction and services that account for the common defects that have an influence on health, and how planning and building control seek to play a part in protecting the interests of those who might be affected by uncontrolled development.
The role of parasites and vectors in the aetiology of disease, as a preliminary to looking in detail at the range of pest species that share Man's ecological niche and thus establish strategies of elimination and control.
Establishing the nature and epidemiological significance of a range of communicable and non-communicable diseases, identifying those that have a particularly strong environmental association;
An introduction to the range of approaches and methodologies employed in researching fundamental and applied physical and social science, including the use of statistics and statistical analysis

## 2. Intervention Strategies and Operational Skills

The fulfilment of the following objectives is a natural point of professional progression for students as they utilise knowledge of the objectives of environmental health practice and relate theory to practice. At this point EHPs can see themselves as the precursor to change in the behaviour of others through their capacity to inform, persuade, educate and criticise. A working understanding of these operational skills, during a placement or period of work experience, is normally essential for the skills to be properly embedded, but ahead of this much can be inculcated through close instruction from an experienced practitioner-lecturer.

Some of these are detailed below:

Identify, and articulate, the nature, impacts, mechanism of impact and the potential or realised health outcomes of the stressors previously studied.
Identify the points where the role of the EHP might be best practiced as a means of intervening to prevent, control or mitigate the impact of the stressors previously studied, but recognising the need to consider the political, technological, commercial and financial implications.
Develop a working practice that routinely involves assimilating and integrating data from works of authority, legislation, codes of practice etc, and by mobilising the data thus acquired through local research, use it in a way that maximises the intervention.
Recognise the desirability / primacy of compliance strategies that through effective informal action (particularly the capacity to inform and offer advice) the desirable outcome can be achieved (and the likelihood of recurrence minimised).
Identify when, and how best, to adopt the educational role, having regard to the skills of the would-be recipient to make use of the information so obtained.
To know when best to defer to enforcement action (recognising the need for this to be proportionate, transparent and consistent) but once decided upon the pursuit of formal action, to collect and assemble such evidence that the matter is dealt with efficiently and effectively.
Recognise how inspections, investigations and audits (conducted with a clear idea of how to maximise their impact), and with effective engagement with duty holders (through questioning and 'active listening'), reach an early assessment of normal practice, deduce the effectiveness of systems in place and reveal the mechanisms of control that may (or may not) be in place.
By setting personal goals and objectives, prioritise action (against competing influences from other sources) and in so doing demonstrate the capability and confidence to work independently, whilst learning how best to work in a team and through 'partnership' with other organisations, bodies and health professionals see how effective intervention strategies might arise through 'joint working'.
To routinely weigh-up the effectiveness of different interventions that can be evaluated formally or informally, reflecting on how this would influence one's future approach to intervention, and, if necessary, suggesting how one might alter or adapt the approach to afford a more equitable, efficient and effective outcome.

### 3. Practice skills in each Intervention Field

Whilst the drive towards 'specialism' might suggest otherwise, we hold to the view that skills acquired through practice should be considered transferrable across the discipline. However, for the purposes of this synopsis, we believe that there remains considerable value in representing the 'practice skills' in terms of four technical 'Intervention Fields' - Food Safety, Housing and Health, Health and Safety and Environmental Protection – with a fifth - 'Public Health' - holding a special place, subtending the four technical subjects.

#### Public Health

As previously mentioned the public health practice skills are considered central to the role of the EHP, and with the transfer of the public health portfolio to Local Government EHPs may find themselves in the strategic development of public health initiatives surrounding such things as smoking cessation, nutritional awareness and obesity control, requiring an understanding of these matters, including an appreciation of health inequalities, the benefits of partnership working, the value of leadership skills, the challenge of discovering novel approaches to difficult problems (especially when seeking to influence health behaviours in the private sector), and ultimately practicing the role of 'health advocate'. In pursuit of this, students completing a programme of instruction and training should understand:

Surveillance and assessment of the population's health and well-being (focusing on the quantitative and qualitative assessment of the population's health and well-being, including managing, analyzing, interpreting and communicating information that relates to the determinants of health and well-being, needs and outcomes).
Assessing the evidence of effectiveness of interventions, programmes and services to improve population health and well-being (focusing on the critical assessment of evidence relating to the effectiveness and cost-effectiveness of health and well-being and related interventions, programmes and services) and the application to practice through planning, audit and evaluation.
Policy and strategy development and implementation for population health and well-being (the area of practice focusing on the means by which policies, implemented through strategies, serve to improve health and well-being, and how this might be measured and the policy/strategy duly evaluated).
Leadership and collaborative working to improve population health and well-being (concerned with leading and managing teams and individuals, building alliances, developing capacity and capability, working in partnership with others and using the media effectively).
Health Protection (acknowledging that this is the principal domain of professional activity of Environmental Health practice, but here focusing on the means of preventing the transmission of communicable diseases and/or protecting against the health impact of incidents that present

the potential for exposure to environmental hazards).

## Food Safety

Understand the concept of 'hazard analysis' in respect of food safety, and with due regard to the legal requirements, guidance and guidelines, apply this in order to minimise the risks to health and to protect the wider interests of the consumer. In pursuit of this, students completing a programme of instruction and training should understand:

The range of biological, chemical and physical contaminants that expose the consumer to risk to health, or might impact on their rights as a consumer.

The technology of food production and packaging that serves to eliminate pathological contaminants (or inhibits their health impact) or otherwise prolongs the shelf-life of the product.

The examination of a range of food commodities encountered at 'point of sale', and by so doing relating appearance, condition and quality to the context in which the foodstuff is presented, and specifically passing judgment on its fitness and wholesomeness.

The means by which contamination that would present a risk to health or consumer interests can be prevented (or their impact minimised) through the application of pre-requisite requirements representing good hygiene / manufacturing practice, where the focus is on 'quality control'.

The principles of Hazard Analysis Critical Control Points (HACCP) and the application of a food safety management system based on the principles of HACCP and 'quality assurance' as a fundamental element in the response of a food business to food safety risk.

The legislation detailing the requirements, offences and enforcement tools that apply to food safety and food standards, including the standards and guidelines that assist in deciding the most appropriate course of action.

The means by which health professionals, working together, detect, investigate and manage outbreaks of food-borne illness, thus minimising further spread and contributing to the epidemiology of particular diseases.

## Health and Safety

To consider, through the assessment of risk, the impact of work activities on the health, safety and welfare of employees (and others who might be affected), and through an appreciation of the duties and responsibilities of employers, be able to recommend mechanisms and strategies that should be applied by them to control hazards, whilst recognizing how this might need to be supported by externally-driven initiatives and intervention through enforcement. In pursuit of this students who have completed a programme of instruction and training should understand:

The role performed by the safety policy and safety management systems in up-holding the general duty of the employer towards their employees, and the means by which their

effectiveness can be determined.
The means by which employees can assist in the monitoring and control of hazards in the workplace through their representatives and safety committees.
The way in which injuries, work-related illness and dangerous occurrences are reported and subsequently investigated.
The application of risk assessment procedures designed to identify the appropriateness of interventions in different workplace situations, and thus to bring about a reduction in the incidence of injury and disease through targeted risk management strategies.
The means by which occupational health hazards are identified and dealt with by specialist, partner health professionals, and beyond these strategies found to manage different classes of hazard.
The way in which different workplaces are distinguished for the purposes of enforcement, and how the Health & Safety Executive is configured, administered and its enforcement duties discharged.
The importance of using the wide assortment of information material, guidance and codes of practice relating to health and safety in the workplace to good effect in determining the most appropriate course of action, deciding the frequency of re-inspection thereafter, and developing strategies for focused, local intervention.

## **Housing and Health**

To appreciate the complex relationship between housing and health, and through this recognise how social, political and economic factors combine to bring about poor housing standards, and using knowledge of construction technology, risk rating and housing law, evaluate the risks associated with housing defects and deficiencies, and identify the intervention that is demanded or best suited. In pursuit of this, students completing a programme of instruction and training should understand:

The range and types of house and housing tenure in the UK and how this varies regionally and locally and is represented by problems characteristic of construction, ownership and occupation.
The special problems that are encountered by tenants of multi-occupied houses and other buildings and how this requires special consideration of the additional risks from fire, over-crowding and shared use of facilities.
How the Housing Health and Safety Rating Scheme (HHSRS) serves to establish the risk posed to occupiers of poor housing, and how its use in the hands of EHPs provides the means by which that risk can be classified and intervention duly indicated.
The application of housing law to the successful determination of housing defects that amount to different degrees of risk to the occupants of individual privately-rented properties, having regard to the appropriateness of the formal and informal options available to deal with them, and the availability of grant assistance where special circumstances exist.
That, beyond dealing with the individual property through housing law, the means exist by which some form of area renewal or improvement could be considered, and that this might serve to remedy housing, social and environmental problems.
The need to track changes in housing policy (and so appreciate the likelihood of imminent

amendments to legislation) brought about by research, availability of financial support and political will.

## Environmental Protection

Understand the sources, modes of transport, environmental impact and health effects of pollutants, and how these might be monitored, analysed, evaluated and controlled through the application of technology, management and enforcement of legal measures. In pursuit of this, students completing a programme of instruction and training should understand:

The origin and nature of 'nuisance' as a legal entity, and in particular the position of 'statutory nuisance' as a key element of remedy in the field of environmental health.

The impact of poor air quality on health, and the means available to monitor and evaluate gaseous and particulate pollutants, and thereafter seeking to manage their control.

The means by which noise emitted by a commercial premises or undertaking is measured and assessed, and from this can be evaluated in terms of its likelihood to cause harm or complaint.

The factors that might affect the quality and safety of a potable, bathing and recreational Water from different sources, and the means of confirming this through sampling and assessment, and thereafter bringing about a technical or legal remedy in the interests of the health of the consumer.

The nature and effectiveness of the different means of draining land and property, and thereafter the different mechanisms used to treat sewage and waste water locally or remotely, and the impact that the resulting outfall might have on health and the environment.

The challenges faced in solid waste disposal both now and in the past, and how this requires the means of deterring unlawful disposal today, and the assessment and remediation of land previously contaminated by industrial or domestic waste, especially when the land is destined to be redeveloped) and in a positive sense appreciates the vital role played by re-cycling.

The means by which 'prescribed processes' are subject to special legal provisions involving the issuing of permits and consents.

The role of the EHP (in conjunction with other agencies and health professionals) in the implementation of 'emergency plans' drawn up to deal with major incidents in which the public might be exposed to hazardous emissions.

Consideration of the risks posed by environmental radiation associated with high-voltage power transmission, telephony and natural emissions e.g. radon

## 4. Core Competencies

The 'core competencies' refer to the range of skills that would be expected to have been acquired and practised by the EHP in training, but as yet may have not become embedded through sustained practice. Taken together with the objectives set out in the 'Portfolio of Professional Practice', the competencies detailed below are those that

would be expected of the so-called 'Day Zero' graduate who has undertaken the training necessary to complete the ELP / PPP, but no more:

Plan and execute the appropriate inspection, investigation or audit to characterise the hazard in context.
Plan and execute the means by which numerical sampling, survey or surveillance data might be secured to reinforce that which is known about the hazard.
Using the data obtained from sampling, surveying and surveillance organise and analyse this in form that allows the determination of the level of risk against the hazard.
Consider and consult the available standards, specifications and guidelines that relate to the matter in hand so as to establish the extent of the hazard and level of non-compliance.
Using the combination of first- and second-hand data thus secured, establish the case for intervention and the options available, taking into account the likely cost and beneficial outcome, and so its capacity to eliminate, reduce or otherwise mitigate the risk.
Where grounds need to be found for intervention based on legislative requirements, be prepared to demonstrate how formal action offers the most appropriate course of action, and where this focuses on the strength of the evidence obtained, consider how a successful defence, if any, might be mounted;
Understand the EHPs role in securing evidence (and maintaining its integrity), preparing legal summaries, taking and writing witness statements, serving legal notices and presenting oneself as a credible witness.
Consider the limits to the effectiveness of the EHP working alone, and by so doing make a case for working with others or in partnership, routinely identifying with whom this might be affected (individuals, statutory agencies, private-sector) and the contribution that they might make to the outcome.
Recognise that 'reflection' is an essential element of professional practice and that EHPs should make a conscious effort to consider activities and interventions performed in terms of health outcome and the sensibilities of those affected.
Hold uppermost the need to be sensitive in all dealings with the public or commercial operators in that they have rights and responsibilities of their own, and that a successful outcome might require concessions and compromise.
Recognise the need to maintain the reputation of the Chartered Institute of Environmental Health by up-holding its code of professional ethics.