POSTGRADUATE DIPLOMA IN PESTICIDE RISK MANAGEMENT (DPRM)

(MG021)

PROGRAMME BROCHURE 2012/13

School of Public Health and Family Medicine

Faculty of Health Sciences

University of Cape Town

DEADLINE FOR APPLICATIONS: 30 SEPTEMBER 2011

COURSE COMMENCES: **February/March 2012**

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School of Public Health and Family Medicine, Faculty of Health Sciences, University of Cape Town (UCT)

Programme Convenor:
Dr. H-Andrea Rother, Ph.D. (Michigan)

Collaborating Institutions:
United Nations Food and Agricultural Organization (FAO)
Swedish Chemical Agency (KemI)

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INTRODUCTION

This brochure provides the detail needed to assist prospective candidates in deciding whether the Postgraduate Diploma in Pesticide Risk Management (DPRM) programme suits their needs. Students interested in applying for this course should contact Cynthia Lewis for instructions at: cynthia.lewis@uct.ac.za. Students will need to apply on-line at: http://applyonline.uct.ac.za. General information about the University of Cape Town (UCT) is available at: www.uct.ac.za.

The DPRM programme is structured around the International Code of Conduct on the Distribution and Use of Pesticides (the *Code*) published by FAO[1] and WHO[2]. The Code offers a holistic and comprehensive guideline for managing all aspects related to pesticides and the DPRM focuses on implementation of the Code particularly for pesticide risk managers and those involved in pesticide risk reduction in developing countries and countries in transition.

The DPRM is a two year part-time flexible learning programme with a substantial distance learning component using internet based educational technology. It includes two two-week residential sessions at UCT; the first at the beginning of the two year cycle and the second at the end. There will be substantial requirements for homework in the form of assignments and project related work, expected self-directed learning and regular distance communication between students and lecturers extending over the two years.

1. PROGRAMME OBJECTIVES

1.1 Pesticide Risk Management

The primary purpose of this qualification is to strengthen regulators and others in their ability and capacity to effectively manage, regulate and reduce pesticide risks as no one discipline covers all the facets of pesticide regulation and management in line with the Code. Therefore, this programme will be multi-and interdisciplinary in its content in order to provide students with the skills and knowledge required for managing and reducing pesticide risks, particularly in difficult pesticide use environments found in developing countries and economies in transition.

Intense global use of pesticides poses a high risk of acute and chronic health effects to the general public and workers, as well as environmental contamination. Key role players in regulating, managing and reducing pesticide risks in African and other developing countries lack the capacity to adequately and effectively regulate and manage pesticides as their training does not cover the all of the technical and social aspects required. Some of the consequences of not having specialized training on pesticide risk management for regulators and others, are that workers and vulnerable groups (children, women, immune deficient) are poisoned and/or have long term health effects, the environment is polluted from uncontrolled use and improper disposal, and highly toxic pesticides are used rather than substituted with less toxic alternatives.

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[1] Food and Agriculture Organisation of the United Nations
[2] World Health Organisation of the United Nations

Currently, key role players in pesticide risk management in Africa and other developing countries do not have access to postgraduate courses on pesticide risk management that addresses the principal areas covered by the Code.

1.2 Target candidates

The DPRM is **aimed primarily at regulators of pesticides**, inspectors (health, labour, customs and environment), public health pest control managers, pesticide laboratory analysts, disposal and waste management managers, but is also suited for academics, researchers, NGO and United Nations staff and others working in the field of pesticide/chemicals management.

Places are available to students from other countries, particularly in Africa and other developing countries.

Individual courses will be open, subject to any limitation on numbers, to candidates from other postgraduate degrees at UCT and to individuals interested in single semester courses not for degree purposes.

2. CURRICULUM REQUIREMENTS AND ORGANISATION

2.1 Time commitment

This programme is a two year part-time flexible learning programme with a substantial distance learning component using internet based educational technology.

2.2 Entry requirements

- An approved undergraduate Bachelors degree in agriculture, health, toxicology, chemistry, social science or other relevant field from this University or from another university recognized by the Senate for this purpose.
- Experience in any relevant pesticide, pest or pesticide/chemicals management field
- Evidence of proficiency in English, both written and spoken; Minimum TOEFL score required in 88; *A formal test of English proficiency is required of applicants from non-English speaking countries.* See University Language Policy (requirements in the UCT Directions for Applicants – pg 5 at: http://www.uct.ac.za/downloads/uct.ac.za/apply/forms/directions.pdf)
- Reliable and continuous computer connectivity
- Computer literacy
- Proven ability in writing technical reports and assessments
- Numeracy
- Completion of a chemistry foundation course

2.3 Programme structure

There are **four core modules** and **six elective modules**. All students must successfully complete the four core modules before completing two electives of their choice. Each module is worth 20 Higher Education Qualifications Framework (HEQF) credits and students are required to complete a total of 120 HEQF credits.

Each module has a theme around which the inputs are organised in relation to aspects of the Code. Teaching inputs are intended to be non-didactic, and to allow student participation wherever possible. Candidates are expected to undertake substantial homework preparation and activities, as well as self-directed learning. They will be expected to read widely and intensively around topics of the programme, and to contribute to teaching inputs themselves either directly or by way of specially structured interactive debates and discussions in an on-line chat room forum, as well as through posting discussions on-line. The content of these activities will include critical appraisal of the elements of the Code, implementation of the Code; literature on pest and pesticide management, toxicological risk assessment, environmental and impact risk assessment, pesticide policy and politics, international conventions, and the life-cycle analysis; project work, presentations by students as well as assignments relating to the theme of each session within modules.

Practical activities on addressing pesticide occupational and environmental health problems, environmental contamination, management of stockpiles, etc, will take the form of assignments for each course within each module. These assignments are designed to equip candidates with the capacity to implement the Code, pesticide risk management and risk reduction strategies relevant for developing country contexts through exercises, for example, such as developing a needs assessment, health risk assessment, ecotoxicology risk assessment, gap/situation analysis and a stocks/container management inventory.

Final examinations will be written at UCT and comprise three written papers covering core modular material, and an oral examination for selected candidates. Examinations are closed book and count for 50% of the marks. The rest of the marks arise from continuous assessment by way of assignments (15%), project work (20%) and student contribution to asynchronous and synchronous learning activities (15%).

It may be possible before the end of the Diploma to **upgrade to a Master of Philosophy in Occupational Health**. This will only be available to selected candidates based on their performance in the course, and they will need to complete a substantial research dissertation in order to obtain the Masters instead of the Diploma.

2.4 Computer hardware, software and skills required of students

As this course contains a substantial component of online and self-directed learning, it is imperative that the applicant understands the requirements for computer hardware, computer software, computer skills, time spent working on the course while off campus and student participation expectations if accepted into the course.

In short, candidates should have good and easy access to a reliable computer, and have familiarity and facility with computers, email, the internet and the software below.

2.4.1 Computer Hardware Specifications Requirements

- a Windows XP or VISTA or Apple MAC operating system

- At least 1GB RAM and 2GHz processor speed
  (otherwise pages could be slow to load)

- Sound card with microphone and speakers/headphones

- 48 x CD ROM drive

- Screen resolution should be at least 800x600 and
  set to a colour depth of at least "High Colour (16 bit)"

2.4.2 Computer software Specifications:

- Microsoft Office software including:
  - ➤ Word
  - ➤ Excel
  - ➤ Powerpoint

- Outlook express or equivalent email handling software

- At least Internet Explorer version 8

- Windows Media Player to run some of the interactive materials

- Have fast broadband access and connectivity to the Internet either at home or at work, preferably both.

2.4.3 Other computer skills

Students should be able to **type** at a speed of at least 15 words a minute, and if not be prepared to either learn to touch-type (software available to learn on your own computer) or to obtain voice recognition typing software.

2.4.4 Important computer information for Students

➤ Candidates will have to bear Internet Service Provider subscription costs in order to participate meaningfully in the web based distance learning programme (an online learning environment called **VULA**) in order to view learning materials, to download these for printing, to participate in asynchronous bulletin board discussions, synchronous chat groups, and to do exercises and online tests from time to time. There will however be savings to students as a result of decreased face to face time in Cape Town which will offset any (smaller) costs of increased internet connect time and printing at home.

➤ Prospective candidates will have to undergo **tests** which will establish whether they are able to meet all the necessary hardware and software requirements to enable participation in the distance learning aspects of the course. If these are failed, they will be encouraged to upgrade hardware and software and/or learn the necessary computer skills that will be required to enable participation in the distance learning aspects of the course. If the test is not passed and it is not possible to upgrade hardware, software or improve computer skills, it will not be possible to be accepted into the course.

➤ If accepted into the course it is necessary to **register fully** including payment of fees and to make all necessary visa, travel and accommodation arrangements in Cape Town **before** the course begins. This will facilitate access to the UCT computer server on which the distance learning component is based, and will ensure that all the time during the first residential session at UCT is devoted to academic work. If registration is not completed fully before the course begins, it will not be possible to access these learning activities.

2.5 Assessment of student performance

Formative assessments count 50% and summative assessments 50% of the final course mark. The pass mark for each course is 50%. Candidates are assessed continuously through their active participation (this will be monitored), assignments and examination. As sub-minima, a candidate is required to obtain an overall mark of 45% in semester work assessments, at least 45% in the examination, and at least 33% for participation.

2.5.1 Distinction
The Diploma may be awarded with distinction to candidates who average 75% or above on all coursework, tests and examinations, with a 70% sub-minimum on each component.

2.6 Programme Rules
2.6.1 Entry
- All participants, including non-degree candidates, or candidates for other UCT degrees, must register and pay fees.
- *People may not "audit" courses, i.e. may not "sit in" for non-examination purposes.*
- Participation by non-degree candidates or candidates for other UCT degrees must be approved in advance by the programme convenor, via an application to the administrator. These participants must register and will be billed.

2.6.2 Attendance/on-line participation

As this course contains a substantial component of distance and self-directed learning, it is imperative that students understand the time and participation requirements that will be expected of them. These include:

- Following a set timetable for course preparation by timeously reading materials provided, conducting self-directed learning activities by going beyond the materials provided, and diligent application to the various exercises, tests and project related work that constitutes the course

- Daily accessing (approximately 30 mins per day) and participating in the UCT VULA online learning environment is required for asynchronous (writing and reading FORUM messages) and synchronous (chat room discussions) learning activities. Turnaround times for email should be not greater than 24 hours and on-line participation is monitored by the course convenor, as well as graded.

- Attending the initial two-week session on site at UCT and the final examinations two-week session at the Health Sciences Faculty at UCT in Cape Town is compulsory.

2.6.3 Communication
- As the primary communication between students, course convenor and section lecturers is through e-mail and Vula it is essential that students ensure the course administrator has the student's current contact details (e-mail and phone) during the full time they are registered as a student.

2.6.4 Assignments
- There are five to seven assignments per module.
- Hand in deadlines are specified in advanced and late assignments will incur a deduction from the final grade.

2.6.5 Plagiarism

- The University has strict rules against plagiarism (i.e. presenting the work of others, including fellow students, as one's own without acknowledgement).
- Candidates will be expected to submit signed declarations with all written work.
- Plagiarised work will earn zero credit, and the student will be reported via the University disciplinary process.

2.6.6 Summarised University Language policy
(http://www.uct.ac.za/apply/intlapplicants/degree/applications/language/ /)
English Foreign Language (EFL) or Foreign Permanent (FP) applicants whose primary language is not English are required to submit to one of the following with their application:

- a recent score (obtained within 3—5 years before application for
- admission) of at least 570 (paper-based test) or 230 (computer-based test) on the Test of English as a Foreign Language (TOEFL);
- a recent overall band score of 7.0 (with no individual element of the test scoring below 6.0) on the International English Language Testing System (IELTS); or, noting that this may only be written at certain designated venues within South Africa, a score of at least 65% on the University's Placement Test in English for Educational Purposes (PTEEP).

2.6.7 The Writing Centre
The Writing Centre at UCT which forms part of the Language Development Group in the Academic Development Programme (Centre for Higher Education Development) offers students assistance with academic writing. Please visit their website: http://www.writingcentre.uct.ac.za/.
Candidates may be referred to the Writing Centre by staff on the basis of performance in written work during the programme.

2.6.8 Leave
Notice to Leave: Withdrawal of Registration
Students or their parents or guardians must give notice of intention to discontinue studies in writing by completing the Cancellation of Registration Form and submitting this to the Health Sciences Faculty Office **by registered mail**.

Leave of absence
Any candidate seeking to break registration must apply for leave of absence *in advance* to the faculty officer and the programme convenor. This application must be motivated and if accepted will be granted *for one year only.* Retrospective leave of absence is not granted. In such cases, full payment of fees for any "missed year" is required before re-registration.

3. GENERAL INFORMATION

3.1   Fees (See**: http://www.uct.ac.za/usr/finance/fees/fees2011.pdf)**
The University's course-based fee structures will enable students to calculate the cost of their academic studies at UCT in 2011 based on 2010 fees (there will be a fee increase of less than 10% so this is just an estimate). Students can use the course codes listed in this brochure to look up the all inclusive cost of the degree in the fees booklet.
(See: http://www.uct.ac.za/usr/finance/fees/fees2011.pdf). The sum of these costs will give the total cost for the set of chosen courses.

Non-SADC international students will be billed in South African Rand. An 'out of–state' or 'international levy' called the International Term Fee, will be charged in addition to the individual fees. Both the International Term Fee plus the individual course based fees must be paid prior to registration. An international student is someone who requires a study permit.

All students from outside South Africa and other SADC countries should refer to fees for international students on page 12 of the Fees booklet on the website referred to above.

3. 2   Financial assistance
Information regarding scholarships and bursaries is available on request from the Postgraduate Funding Office, University of Cape Town.
Tel: +27-21-650 3629
Fax: +27-21-650 4352
Email: pgfunding@uct.ac.za
Website: http://www.uct.ac.za/apply/funding/postgraduate/notice/

4. PROGRAMME CONTENT

4.1   YEAR 1: CORE MODULES
Students are required to complete all Core Modules in order before taking any electives.

4.1.1 Core Module 1: PESTICIDE RISK MANAGEMENT
Course outline: Five (one week each) courses introduce students to the Code, a life cycle analysis approach, pesticide policy, a legal framework for pesticides, international conventions, and how to regulate vulnerable populations and complex use environments. The central management philosophy taught in this course is to regulate, control and monitor pesticides through a holistic life-cycle approach (from the beginning until the end of a product's life). Students will be introduced to the basic principles of risk, risk assessment, highly hazardous pesticides, ethical pesticide policies, a situation and gap analysis, pesticide management, risk reduction policies, five international agreements (Basel, Stockholm and Rotterdam Conventions, the Code and SAICM), compliance with

international commitments and standards, registration issues, pesticide governance, implementation of pesticide legislation, incorporating vulnerability into the registration process and how to design a life cycle management strategy for a particular pesticide. At the end of the course students will have developed an approach to critically analyze pesticide policies and the registration process in order to promote effective regulatory implementation in varying pesticide use contexts (e.g., different climates, populations, legal structures).

4.1.2. Core Module 2: HEALTH AND SAFETY MANAGEMENT

Course outline: The course provides students with the technical knowledge base and skills to regulate and manage the acute and chronic health effects associated with exposures to pesticides. To promote this understanding students will receive training in the basic chemistry of pesticides and how to interpret the WHO and GHS hazard classification systems. An introduction to pesticide toxicology, pesticide epidemiology and the principles of risk and hazard assessment provides the technical skills and knowledge base to evaluate the quantitative human risk assessment data in pesticide dossiers. The health consequences of pesticide exposures are covered through an understanding of exposure pathways and multiple exposures, as well as endocrine disruption, neurotoxicity, geneotoxicity, immunotoxicity (vital for countries with high immune compromised populations), and reproductive effects. The course also covers interpreting strength of association in epidemiological studies and critically appraising the pesticide health literature. Students learn how to assess human risk assessment data submitted as part of a pesticide dossier, and application of the Code and life cycle approach to health risk assessment.

4.1.3. Core Module 3: MANAGEMENT OF ENVIRONMENTAL RISK

Course outline: This course provides students with an understanding of:
- Principles of environmental risk assessment as used in the pesticide registration process (e.g., predicting environmental concentrations and toxic effects, quantifying risk, tiered assessments);
- Differences between (pre-registration) pesticide risk assessment and (post-registration) pesticide impact studies and types of impact a pesticide may have (e.g., effects on organisms, environmental contamination, biodiversity, ecosystem services, agronomic productivity, disease vector control);;
- Environmental protection goals: determining what needs to be protected and to what extent; linkages with environmental legislation and policy; harmonisation and environmental governance
- Approaches to the assessment of (potential) environmental impact of a pesticide after its introduction for use in a country (e.g., environmental monitoring, incident reporting).
- How basic chemistry of pesticides influences their properties, environmental fate and persistence;
- Assessment of pesticide contamination – basic methodology;
- Sampling for pesticide residues (e.g., methods for organisms, soils, water);
- Influence of temperature and other environmental parameters on environmental fate and persistence of pesticides.

- The principles of ecotoxicology with reference to pesticide use
- Impacts at organism, population and community levels of organization and how ecotoxicology is used in risk assessments, and for the formulation of pesticide policy and registration
- Use of risk assessment data in the decision-making process, how a risk management component is added, measures to mitigate and reduce risk
- The principles and varied methodologies for assessing pesticide impacts in the field
- Pesticides effect non- target organisms and how this can lead to pest resurgence
- How to develop pesticide resistance management programme

4.1.4. Core Module 3: ALTERNATIVES AND RISK REDUCTION STRATEGIES

Course outline: The course provides students with the complex and diverse background knowledge required to prevent pesticide exposures (protecting human health and the environment) through various alternatives, control mechanisms and risk reduction strategies. The course presents the methods for a life cycle assessment, needs assessment, and managing exposures. To reduce increased ineffective use of pesticides and associated hazards/risks, students are introduced to alternative approaches to pest management (e.g., IPM, agro-ecology, conservation agriculture, sustainable intensification of production), the implementation of registration as a risk reduction strategy, how to control distribution and trade controlling use, how to conduct a social impact assessment, and risk communication models, theories and application.

4.2 YEAR 2: ELECTIVE MODULES

Students are required to take three electives of their choice.

4.2.1. Elective Module 1: QUALITY ASSURANCE IN PESTICIDE RISK MANAGEMENT

Course outline: The course will lead the student through the procedure of assessing the suitability of a pesticide for use under local conditions. The course will introduce and explore the concept of chemical equivalence to allow students to better understand the comparative analysis of pesticides which may be used for similar purposes. This foundation will allow students to then examine analytical requirements (formulation and residue) and capacity to assist in determining if pesticides can be considered as equivalent. The course then leads the student through the various assessment criteria and methods needed to be considered when determining if a pesticide is suitable for use under local environmental and technological conditions, as well as assessing laboratory capacity.

4.2.2. Elective Module 2: PESTICIDE STORAGE AND TRANSPORT

Course outline: The course will provide the student with comprehensive systems for storing and transporting pesticides (and other hazardous chemicals) in compliance with international best practice methods. The module commences by setting the international setting for chemicals storage and proceeds to lead the student through the minimum requirements for design and management of pesticide stores. The module then provides the student with an automated system for stock management linked to a central register for pesticides which can be used nationally. The course guides the student through international transport regulations and provides systems for vehicle assessment, driver training and risk reduction through route planning and assessment. The student is introduced to the automated system for route selection between two points using the United Nations Food and Agricultural Organizations (FAO) data base system.

4.2.3. Elective Module 3: OBSOLETE PESTICIDE MANAGEMENT

Course outline: The course will provide students with systems needed to complete an inventory of usable and obsolete pesticides. The PSMS data base system is taught providing the basis for local field work on data collection and management. The student will be required to use the inventory data to complete a series of environmental assessment exercises related to risk assessment, selection of potential collection points and transport planning for obsolete stocks. The course then introduces the concept of environmental management planning and development of risk mitigation strategies. This will include the development of a safeguarding (i.e., repackaging, collection and storage) strategy and a disposal strategy for various waste materials commonly encountered during projects involving obsolete, banned and unwanted pesticides. The module ends by providing a series of systems which can be used to implement the strategies developed.

4.2.4 Elective Module 4: CONTAINERS AND CONTAMINATED SITE MANAGEMENT

Course outline: The course will provide the student with systems for the scoping of project components related to contaminated site assessment and management of pesticide containers (legacy stockpiles and new wastes). The modules then progresses to the development of operational plans for the implementation of container and contaminated site assessments leading to development of site specific environmental management plans and remediation strategies. With respect to container management the module makes the distinction between the development and implementation of strategies for addressing existing stockpiles of contaminated materials and the need to develop sustainable container management programmes for the future. The student will be required to demonstrate competence in the development of operational plans for a series of case-study contaminated sites plus develop container management strategies based on a series of hypothetical situations. The student will also be required to look to maximize local treatment of all materials based on assessment of national capacities and application of international best practice / standards for treatment under local conditions.

4.2.5. Elective Module 5: CHEMICAL CONVENTIONS

Course outline: This course aims to provide students with an in-depth knowledge base of the various international chemical conventions and agreements, and their relevance to managing the risks associated with pesticides. These include the Code, the Stockholm Convention, the Rotterdam Convention, the Strategic Approach to International Chemicals Management (SAICM) and Basel Convention. By the end of the course, students will be able to:

- Describe the detailed requirements of different conventions at each stage in the pesticide life cycle and relate them to national legislation to regulate pesticides;
- Understand how chemical conventions can be implemented at local level in a systematic and synergistic way;
- Critically appraise their own national legislation and assess its compliance with international convention requirements; and
- Identify and use existing information resources about conventions and international initiatives.

4.2.6. Elective Module 6: PUBLIC HEALTH AND PESTICIDES

Course outline: The course provides the student with the skills for managing public health pest problems and how to implement effective control strategies (e.g. integrated vector management [IVM]) through the life-cycle approach, alternatives and cost-effective approaches. Students examine the World Health Organization models for evaluating and testing pesticides to be used in public health, along with the WHO's strategies, policies and guidelines for using pesticides in public health. On completion of the course students will have knowledge of:

- a holistic approach to public health vector and disease management
- basic vector ecology and biology for major diseases
- WHO global framework for IVM
- IVM for malaria
- IVM for nuisance pest control; and
- how to integrate public health pesticides legislation, develop a reporting system, and assure efficacy and compliance with international conventions.

5. KEY EXIT COMPETENCIES

By the end of the programme, candidates should:

- understand and be able to apply components of the Code to their work/research context for both pesticide risk management and risk reduction
- be able to conduct a situational and gap analysis, as well as a needs assessment and life-cycle analysis
- be able to implement a holistic approach to pesticide risk management and risk reduction
- understand and apply the concepts of risk management, the life-cycle approach, pesticide epidemiology, human toxicology, ecotoxicology, legal and international frameworks for regulating pesticides, comparative risk assessment, social impact assessment, risk communication and ethical pesticide management
- understand how to design health and environmental risk assessment data required for a pesticide dossier

- be able to assess a pesticide dossier and develop appropriate criteria for registering a pesticide
- understand the risks to vulnerable populations and design appropriate control/risk reduction measures/strategies
- be able to evaluate socio-economic data on a pesticide
- understand and apply legal concepts and a legal framework to managing pesticides and implementing risk reduction strategies
- be able to explain the five key international commitments and standards relevant for pesticide risk management/reduction
- be able to describe various risk reduction management strategies and alternatives

APPLICATION CHECK LIST

☐ Completed **UCT on-line** application

☐ Completed **DPRM application**

☐ Submitted **all** certified copies of transcripts to UCT

☐ Submitted key explaining transcripts' grades/marks

☐ Submitted proof of English proficiency (e.g., TOEFL results)

☐ Submitted copy of ID or passport

☐ Submit all applications/ documents by **30 September 2011**