



**Centre for
Ecology & Hydrology**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Integrated
Pollution
Management

Knowledge Transfer Network

Tamiflu™ and the Environment

Implications of Use under Pandemic Conditions

A one day high-level workshop

3rd October 2007, Magdalen College, Oxford

Integrated Pollution Management KTN
University of Oxford
Begbroke Science Park
Yarnton
Kidlington
Oxfordshire
OX5 1PF
www.ipm-ktn.com

Event kindly supported by:



Worshipful Company of
Water Conservators



Chartered Institution of Water
& Environmental Management

The workshop will be highly participatory. The morning will comprise a series of briefings on key issues and background information, with time for questions. Poster presentations over lunch will provide supplementary information. Following this, the workshop will divide into small working groups to identify areas for further research.

09:00 - 09:30	Registration and refreshments
09:30 -	Start of morning session Chairman: Mr. A. Rachwal
09:30 - 09:40	<i>Opening remarks:</i> - Mr. A. Rachwal, Independent consultant - Professor G. Noone, Worshipful Company of Water Conservators - Mr. N. Reeves, CIWEM
09:40 - 10:10*	<i>An overview of the risks relating to Tamiflu release into the environment</i> - Dr. A. Singer, Centre for Ecology and Hydrology
10:10 - 10:40*	<i>Antivirals and their use in pandemic influenza strategy: benefits and risks</i> - Professor J. Oxford, Retroscreen Virology Ltd.
10:40 - 11:10*	<i>Assessing the environmental effects of human pharmaceuticals: an overview of current practice and opportunities for new approaches</i> - Professor T. Hutchinson, AstraZeneca
11.10 - 11.30	Morning Coffee
11:30 - 12.05*	<i>A preliminary Environmental Risk Assessment for Tamiflu™</i> - Dr. J. Straub - F. Hoffmann La Roche Ltd.
12.05 - 12.25*	<i>An environmental regulator's perspective on Tamiflu™ use under pandemic conditions</i> - Dr. T. Boucard - Environment Agency
12.25 - 12:55*	<i>Trying to identify high risk areas at the regional, catchment and river reach level</i> - Dr. A. Johnson - Centre for Ecology and Hydrology
12:55 - 14:10	Lunch with poster session
14:10 - 14:20	<i>Introduction to working group sessions: objectives and expected outcomes</i> - Dr. B. Howard
14:20 - 15:50	Working groups <i>Rapporteurs prepare to feed-back to summing-up session</i>
15:50 - 16:10	Afternoon Tea
16:10 - 17:00	<i>Working group summary reports</i> - Mr. A. Rachwal (Chairman)
17:00 - 18:00	<i>Summary panel discussion: key issues, priorities and emerging solutions</i>

*Including 10 minutes for questions

Why the workshop?

Should an avian flu virus re-assort into a human flu virus, pandemic conditions could arise in the human population worldwide. Tamiflu™ and other antivirals have been developed to limit the spread of infection, decrease the incidence of flu-related complications, and ameliorate symptoms. These are being stockpiled around the world in readiness for use during a pandemic.

Following administration, up to 80% of the Tamiflu™ dose received is expected to be excreted in the form of the metabolite and active antiviral, oseltamivir carboxylate (OC). A number of properties of Tamiflu™ (oseltamivir phosphate) and OC, including high solubility and low biodegradability mean that they are expected to pass through sewage treatment works and remain in this form in rivers. Calculations of the concentrations of OC to be expected in rivers in the event of mass administration of Tamiflu™ have recently been published. The results provide a basis for concern about possible ecotoxicological effects and the potential development of viral resistance. The risks in a densely populated island such as mainland Britain are likely to be amongst the highest in the developed world.

In order to better understand Tamiflu™ release into the environment and evaluate associated risks to human health and the ecosphere, a wide range of experts and organisations need to be actively involved. Early action and holistic thinking about the issues is likely to lead to a more effective pandemic flu strategy and help to ensure that humans and the environment are protected to the greatest extent possible.

What is the workshop expected to achieve?

The workshop will assess the implications of Tamiflu™ release into the environment following mass administration under pandemic flu conditions. This will be done by addressing the following sequence of questions:

- What are the implications for ecosystem and human health?
- Are they significant enough to warrant further research?
- If so, what research would be needed?
- In the light of any implications, do pandemic influenza strategies need to be reviewed?

By bringing together a wide range of organizations and relevant areas of expertise, it is expected that the implications of Tamiflu™ release into the environment can be prioritized and further actions identified.

What will happen after the workshop?

A report containing a summary of the discussions and indication of next steps will be made available following the event.

Who can participate?

Key representatives from Government, regulators, pharmaceutical companies, water utilities, research institutions, learned bodies, and consultants will be present. The event is by invitation only, but nominations are welcome. There will be no charge for participation.

For further information

Administrative contact: Mrs Wendy Claye
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Integrated Pollution Management Knowledge Transfer Network,
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Workshop Venue: Magdalen College, High Street, Oxford, OX1 4AU
For venue information, see www.magd.ox.ac.uk
For a location map visit
www.ox.ac.uk/aboutoxford/maps/colls.shtml

Workshops organisers

The Integrated Pollution Management Knowledge Transfer Network is funded by the UK Department of Innovation, Universities and Skills and Department for Environment, Food and Rural Affairs to improve the UK's innovation performance in the management and remediation of pollution. IPM-Net brings together business professionals, the knowledge base and networks in the traditionally separate sectors of land, water and waste in an integrated manner and works with them to accelerate cross-sectoral knowledge transfer. **For more information:** www.ipm-ktn.com



The Centre for Ecology and Hydrology is the UK's Centre of Excellence for research in the land and freshwater environmental sciences. Its research is aimed at improving understanding both of the environment as we see



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it today and the natural processes that underlie the Earth's support systems. CEH is particularly interested in the impacts of human activity on natural environments. The CEH parent organisation is the UK Natural Environment Research Council. **For more information:** www.ceh.ac.uk

Workshop sponsors

The Worshipful Company of Water Conservators

The Worshipful Company of Water Conservators is a Livery Company of the City of London and its aim is to promote the advancement of the science and practice of water and environmental management. The Company continues to maintain and conserve the public requirements of clean water, both for domestic and industrial purposes. To this end, the Company promotes professional and social intercourse between Freemen and Liverymen of the Company by organising meetings, social events and other activities. **For more information:** www.waterconservators.org

The Chartered Institution of Water and Environmental Management (CIWEM)

CIWEM is an independent professional body and a registered charity, advancing the science and practice of water and environmental management for a clean, green and sustainable world. CIWEM has thousands of members in 98 countries, working within local authorities, water companies, regulatory bodies, governments, universities and the private sector. The institution provides a forum for debate through conferences, technical meetings, networking opportunities, policy statements, magazines and journals and supplies independent advice to governments, academic institutions, the media and the general public. **For more information:** www.ciwem.org