M E M O R A N D U M

DATE: 31/01/2002

TO: Each Board Member

FROM: Technical Review Committee

RE: Objection to Proposed Determination on the application from AHP Manufacturing B.V. T/A Wyeth Medica Ireland

Application Details	
Applicant:	American Home Products T/A Wyeth Medica Ireland, Buckley's Cross Roads, Old Connell, Newbridge, County Kildare.
Reg No.:	581
Class of Activity:	12.2 The use of coating materials in processes with a capacity to use at least 10 tonnes per year of organic solvents
Proposed Determination issued on:	
Objection by the applicant:	28 August 2001
Notices under Article 40(1) issued:	21 November 2001

Consideration of the Objection:

The Technical Committee (Mr Patrick Geoghegan, Ms. Niamh O'Neill and Mr Liam O'Suilleabhain) met on 28 November 2001 to consider the objection on the Proposed Determination issued on the application for a revised licence to Wyeth Medica Ireland, Newbridge, Co. Kildare. Ms. Elaine Farrell, Inspector, provided clarification on points raised. Objection to the revised Proposed Determination (PD) were submitted by the applicant. There were no third party objections.

1. Objection to Condition 6.2

Within twelve months of the date of grant of this licence, the licensee shall discontinue the discharge of HRT and OC active substances to sewer. Proposals for the removal of these waste streams from the discharge shall be submitted to the Agency for agreement within six months of the date of grant of this licence.

The applicant disagress with this condition and suggests that reduction of the discharge of HRT (Hormone Replacement Therapy) and OC (Oral contraceptive) active substances to sewer is a valid goal and that it is more appropriately located as an objective of the EMP (Environmental Management Programme) for the following grounds:

- The company has consistently maintained a stringent control on the discharge of HRT and OC actives to sewer during facilities operations and point to their compliance with the emission limit value of 0.3mg/l.

- The concentration of active ingredients in the process rinse water is extremely low and receives substantial dilution with the remainder of wastewater on the site prior to exiting it. The material is then conveyed to the nearby extended aeration wastewater treatment plant for assimilation, prior to final discharge. The environmental implications of this practice, it is contended, are negligible.

- A zero discharge is not appropriate to the processes employed at the Newbridge plant and the company are not aware of any other plant manufacturing OC and HRT where this stringent condition has been applied.

- The toxicity of samples containing OC and HRT actives were found to be low (1.1TU (Toxic Unit)) when tested against selected organisms.

- Respirometry tests have indicated that these substances have no adverse impact on the activated sludge treatment plant into which the wastewater is ultimately discharged for treatment.

- The modification to the existing wastewater handling/treatment system and manufacturing plant requirements which may be required arising from diverting OC and HRT pharmaceutical actives from the wastewater stream, is contended to be excessive, in comparison with the environmental benefits to be gained by doing so. It is contended that Condition 6.2 is neither a BATNEEC nor a BAT option and the company requests its removal on financial grounds.

Committees Response:

Background:

Endocrine disrupters are chemical substances, which are suspected of interfering with the endocrine systems of humans and wildlife. They are contained in oral contraceptives, hormone replacement drugs and animal feed additives, among others. They are also proven or assumed to be present in man-made chemicals such as industrial cleaning agents, pesticides, growth promoters and plastic additives.

In response to public concern on this issue the European parliament adopted, on 20 October 1998, a resolution on endocrine-disrupting chemicals which proposed the following:

- That the Precautionary Principle should be applied with regard to these substances

- That the Commission should submit a list of substances that may be hormone mimicking, calling on industry to use chemicals primarily in closed processes

- That provisions concerning endocrine disrupters should be included in the Water Framework and IPPC Directives.

The commission, on June 14, 2001 adopted the first report on the implementation of the EU strategy on endocrine disrupters. This strategy established a priority list of 553 man-made substances and 9 synthetic hormones for further evaluation of their role in endocrine disruption. In the short term (within 12 to 18 months) priority will be given to conducting an in-depth evaluation of 12 candidate substances, 9 of which are industrial or other substances for which there is scientific evidence of endocrine disruption or potential endocrine disruption and which are neither restricted nor currently being addressed under existing community legislation. In addition 3 synthetic/natural hormones, **oestrone**, **ethinyl oestradiol** and **oestradiol** which will be evaluated in order to gather up to date evidence of environmental exposure and effects related to these substances.

Comment:

The committee is advised that Wyeth Medica uses the following active ingredients in the manufacture of OC and HRT preparations:
Premarin (conjugated form of natural mixed oestrogens of equine origin)
17-B oestradiol (natural or identical to natural oestrogen hormone)
(O) oestradiol valerate (a conjugate of an oestrogen produced naturally in animals (including humans)
Estriol (natural oestrogen)
Ethinyl (O) estradiol (synthetic oestrogen)
and also a number of synthetic analogues of progesterone.

Annual usage of these substances is significant, particularly Premarin, at 70tonnes/annum approximately.

The initial washings/rinses from these processes and equipment are collected and disposed of as hazardous waste. Further washes of process areas also contain some active material and this is discharged to sewer (estimated at 2-3tonnes/month) together with other process wastewater arising and is discharged ultimately to the Local Authority's wastewater treatment plant at Osberstown.

There has been no change in the concentration limits or loading (in relation to pharmaceutical actives) since 1996. At that time the company engaged consultants to carry out a study into the biodegradability of active substances in Osberstown wastewater treatment plant. However there were limitations to this study. The rate of inhibition of activated sludge was determined together with removal efficiencies for the substances of concern. In the case of Premarin 99% removal was achieved while 85% of Ethinyl estradiol was removed.

However, while there are no environmental quality standards or targets as yet set for these substances (natural or synthetic) in the UK or Ireland, some studies have shown that levels as low as 1ng or even 0.1ng/l can have an effect on certain fish (inducing vitellogenesis [(1), (2)]). It has also been shown that conjugated oestrogens can be reactivated in activated sludge and that a sufficiently long retention time may be necessary to ensure complete biodegradation of ethinyl estradiol. The committee is advised that the retention time of the aeration system at Osberstown is limited to 8 hours.

These studies lead to a concern that the levels of these substances in the discharge from Wyeth Medica may be required to be reduced to µg/l-ng/l levels. There is also a background level of natural and synthetic oestrogens arising in the Wastewater Treatment Plant due to the human female population in the area.

The technical committee considers that, on the basis of research available to it, there is no safe level for these substances, when discharging to an aquatic environment. In addition, while there are no EQS for these substances and although the IPPC directive, the Water Framework Directive and the White Paper on Chemicals may deal with this issue in the future, it is considered that the application of the Precautionary Principle with regard to protection of receiving waters, is fully warranted, in this case. Condition 6.2 provides a suitable timeframe for the elimination of these substances being discharged to sewer and also provides options to be looked at in forming a proposal to be agreed by the Agency. This proposal can examine the feasibility of collection and disposal of the particular waste stream as hazardous waste (as it contains pharmaceutical actives) or the provision of a treatment system on-site in line with the principles of BAT/BATNEEC.

Recommendation:

For the purposes of clarity it is recommended that the wording of Condition 6.2 should be amended to include the word "process" as follows:

*Within twelve months of the date of grant of this licence, the licensee shall discontinue the discharge of HRT and OC active substances to sewer. Proposals for the removal of these waste streams from the **process** discharge shall be submitted to the Agency for agreement within six months of the date of grant of this licence.*

2. Objection to Condition 9.4.2

The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall be tested and demonstrated by the licensee to the satisfaction of the Agency and shall be reported to the Agency within three months from the date of grant of this licence.

The company objects to Condition 9.4.2 and requests its removal on the grounds that this programme of testing has already been submitted as

part of licence Reg. No. 309 and that as Condition 9.4.1 requires the testing of bunds every 3 years, that Condition 9.4.2 be removed. (Objection document contains typographical error; last line of para.4, page 3 should refer to Condition 9.4.2).

Response:

As Condition 9.4.1 ensures that the bunds on-site are tested every 3 years, the committee consider that the inclusion of Condition 9.4.2 is unnecessary.

Recommendation:

Delete Condition 9.4.2

Overall Recommendation

It is recommended that the Board of the Agency grant a licence to the applicant
(i) for the reasons outlined in the proposed determination and
(ii) subject to the conditions and reasons for same in the Proposed Determination, and
(iii) subject to the amendments proposed in this report.

Signed

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Mr Patrick Geoghegan

for and on behalf of the Technical Committee

References:

1- Vittellogenin is a protein synthesised in the liver of the oviparous fish, amphibians and most egg-laying mammals in response to oestradiol stimulation. Vitellogenesis (formation of vitellogenin) is normally restricted to the female but can occur in males in response to exogenous oestrogen stimulation.

2- Purdom et al. reported that ethinyl oestradiol caused a rapid and pronounced synthesis of VTG in male rainbow trout on their exposure to concentrations of 0.1 ng/l and above. C.E.Purdom, P.A.Hardiman, V.J.Bye, N.C.Eno, C.R.Tyler, J.P.Sumpter. *Chem. Ecol*.1994,8,275-285.