Sub (12)

Kilshannig House

Cratloe Wood

Cratloe

Co. Clare

Ms Ann Marie Donlon

Inspector,

Environmental Protection Agency

P.O Box 3000

Johnstown Castle Estate

Co. Wexford

25 October 2012

Dear Ms Donlon,

I note that on the 22 October 2012 an additional letter was furnished to the Agency on behalf of Roche Ireland Ltd. The letter is unsigned and is purported to have been sent by one Caoimhin Nolan on behalf of the Agency to Hoffmann La Roche on the 16 October 2008.

The letter is headed H2 Cell Remediation Works and allegedly relates to the capping of H2.

I would respond as follows:

According to Roche Ireland Ltd own consultants URS (45078361, 2005)

"The trial pit studies in 1991 and 2005 show that the H2 area is distinctly different from the engineered cells in respect of both the method of emplacement of waste materials and the underlying geology

The waste in the H2 area was deposited in unlined pits (up to 3.4m deep), with no facilities for leachate interception and collection. In some areas the wastes are emplaced below the water table (the water table was 0.85 to 2.59m below the well casing in surrounding monitoring wells in October 2004).

The natural clay soils are thinner (0.6 to 3.0m thick) under the H2 area than under the engineered cells and excavation of pits has further thinned or removed the protective natural clay layer in parts of the H2 area (the 'deep trench was up to 5m deep and waste is present up to 3.4m below grade in

TP27). Therefore leachate from this area may readily enter the main groundwater flow horizon in the shallow broken rock aquifer and migrate towards the river (as shown by recent events in well 216 following drilling in 2001).

The uncontrolled release of leachate from the H2 area to groundwater is not consistent with EPA guidance on leachate management at landfills during the operational or aftercare phases (EPA, 1997a)"

Roche Ireland Ltd own consultants URS on Capping of H2 area

"Capping of the H2 area to reduce rainfall infiltration is considered to be of limited benefit, as the chemical/process waste in some areas is emplaced below the water table and there is through flow of shallow groundwater through the waste, driven by natural gradients due to the hillside to the west of the H2 area. Capping would require considerable engineering works to profile the H2 area to promote runoff and manage the drainage, but would not eliminate the release of leachate to groundwater. In addition the presence of a landfill cap would restrict the future use of the H2 area and, despite the capital investment, would not provide Roche with a reduction of liability in the event of an unforeseen future incident".

Roche Ireland Ltd own consultants URS recommendation to Hoffmann La Roche on H2 area (Job No. 45078361, 14 October 2005, Section 11.3.2)

"In terms of reducing or eliminating the long term environmental liability associated with material deposited in the unengineered H2 area, excavation and removal of the chemical/process wastes involving segregation and re-use of uncontaminated fill material overlying the chemical/process waste) is proposed as it :

- Removes the source of leachate generation and groundwater contamination of the H2 area:
- Does not require indefinite operation, maintenance and monitoring:
- Eliminates uncertainty relating to impacts of possible future incidents , or changes in regulatory approach, which affect options where the waste mass remains in-situ:
- Facilitates re-use of the H2 area for other purposes such as expansion of the plant".

I would remind the inspector that the discovery of the true state of the H2 hazardous waste pits are against a backdrop of the following declaration by Roche Ireland Ltd.

Roche Ireland Ltd, public declaration relating to its landfill

"The objectors appear to have misunderstood the design of the existing landfill which is on the planning files of Clare County Council. It does not have a concrete base. The site is laid on an alluvial clay base of low permeability covered by a layer of sand, followed by a HDPE liner, a further layer of

sand and yet another HDPE liner and a third layer of sand. There is leachate collection underneath the bottom HDPE liner and between the two liners to check for liner leakage of either liner in either direction."

Yours sincerely

Roger O'Mahony

RPS

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Ann Kehoe,
Administration Officer,
Office of Climate, Licensing & Resource Use
Environmental Protection Agency
P.O. Box 3000
Johnstown Castle Estate
Co. Wexford

22nd October 2012

Re: Additional Information under Section 90 of the EPA Acts 1992 to 2011 - IPPC Licence P0012-05

Dear Ms Kehoe,

Roche Ireland hereby re-submits the additional information for the review of IPPC Licence Reg No. P0012-05, in response to your request issued under Section 90 of the EPA Acts 1992 to 2011, dated 19th September 2012.

The enclosed information supersedes the documentation that was issued in error on the 17th October 2012. It is requested that the information issued on the 17th October 2012 is removed from the EPA website and licensing files and is replaced with the attached documentation which provides a more detailed response to the issues raised by the EPA.

I apologise for the confusion on this matter but if you require any additional information, please do not hesitate to contact me.

Yours sincerely,

Paul Chadwick
RPS Group

On behalf of Roche Ireland Limited.

ENVIRONMENTAL PROTECTION AGENCY
23 OCT 2012

2 SECTION 90 RESPONSE

1. With regard to the landfill including the H2 area, provide a copy of any agreement with the Office of Environmental Enforcement in relation to risk assessment, conceptual model and remediation proposals

On the following pages are the two letter issued to Roche Ireland authorising the proposed approach to the remediation of the on site landfills.

- 6th June 2006 (EPA Correspondence Reference M768(06)AK01CN)) from Caoimhin Nolan, Inspector with the Office of Environmental Enforcement, agreeing to the proposed capping works for the landfill.

- 16th October 2008 (EPA Correspondence Reference P0012-04/AK02CN) also from Caoimhin Nolan agreeing to the proposed remediation works subject to a number of conditions. All conditions specified have been met by Roche.

Mr Gerry Cahill
Head of Safety and Environment
Roche Ireland Limited
Clarecastle
County Clare

16th October 2008 Our Ref: P0012-04/AK02CN

Re. H2 Cell Remediation Works

Dear Mr Cahill

I refer to the following items of correspondence in relation to the conceptual model for the H2 Cell landfill area at Roche Ireland (P0012-04) and its remediation:

- Your correspondence received by the Agency on the 1st July 2008;
- The correspondence from RPS Consulting Engineers received by the Agency on the 16th September 2008;
- Your email clarification received by the Agency on the 10th October 2008; and,
- The Agency's correspondence (ref: AK01CN) issued on the 27th February 2008.

The Agency notes the contents of the documentation listed above, and based on the information provided, agrees to the capping and associated remediation measures proposed for the H2 cell area subject to the following:

1. A Geosynthetic Clay Liner (GCL) shall not be used as the main mineral barrier layer in the capping system.
2. Should a Bentonite Enhanced Soil (BES) be used as the main mineral barrier layer in the capping system, its permeability and depth shall be such that it provides equivalent protection to a 0.6m depth of low permeability clay with a hydraulic conductivity of 1×10^{-9} m/s. Please note that as the current proposed thickness of the BES is 250mm, as opposed to 600mm, the hydraulic conductivity specification of the BES material will need to be increased beyond a value of 1×10^{-9} m/s in accordance with the principle of Darcy's Law. Your attention is drawn to *Appendix C.3 Leakage Through Liners* of the Agency's *Landfill Site Design Manual* in this regard. Details of the actual depth and hydraulic conductivity specification of the BES proposed should be submitted to the Agency in advance of any use of BES in order to demonstrate that it will provide equivalent protection.
3. Detailed specifications for the low permeability clay/BES will be submitted to the Agency prior to its use for capping/lining purposes. This should include details of the actual host material to be used (including particle size distributions), the hydraulic conductivity of the clay/BES, and the acceptable range for dry density, moisture content (and bentonite content in the case of BES) within which the clay/BES will be considered suitable for working with. All installation works shall be carried out in accordance with this specification.

4. Appropriate surface water control measures will be implemented during the works to prevent contaminated water leaving the facility. In particular, any water contaminated with suspended solids or organic solvents should not be allowed to be discharged to the River Fergus.
5. The quality of the surface water being discharged to the River Fergus from the ponds/wetland area adjacent to H2 will be monitored appropriately during the remediation works and records maintained by the licensee. Parameters to be monitored shall include BOD, Ammoniacal Nitrogen (as N), Heavy metals, Organic Solvents and Suspended Solids and the monitoring shall be carried out bi-weekly (i.e. every two weeks) unless otherwise agreed. The licensee shall establish appropriate trigger levels for the key parameters, and shall regard any exceedances of such trigger levels as an Incident (as per Condition 11 of the licence) and notify the Agency and other regulatory authorities accordingly.
6. The number and location of monitoring wells within the H2 cell area to be retained and extended as part of the works shall be agreed with the Agency, and a proposal regarding this should be submitted for consideration. All other wells situated within the H2 area shall be decommissioned in accordance with best practice in advance of the capping works to minimise the potential for interaction of the contaminants with groundwater.
7. Appropriate dust monitoring measures are put in place around the area to be remediated to allow for measuring dust emissions. A proposal on this should be submitted to the Agency for agreement.
8. The work is supervised and signed-off by independent person(s) employed on behalf of Roche Ireland, and following the completion of the works, a Construction Quality Assurance (CQA) report is submitted to the Agency to verify the quality of the capping and remediation works completed.
9. Following the completion of the works an assessment is made of the effectiveness of the capping/remediation measures taken and a report submitted to the Agency, and in particular the impact on groundwater downgradient of the H2 area and the need, or not, for continued groundwater interception is examined. The deadline for the submission of such a report to the Agency will be agreed with the licensee in the future.

In relation to the Agency's previous correspondence on the H2 Cell conceptual model and remediation (ref. AK01CN), the Agency now notes that the current proposal (which is agreed to in this correspondence) includes for no significant re-location of a section of isolated waste (i.e. located near BH216) being planned, as was originally envisaged.

Please quote the above reference in future correspondence in relation to this matter.

Yours sincerely

Mr. Caoimhin Nolan, Inspector,
Office of Environmental Enforcement