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Asiantaeth yr Amgylchedd Cymru
Environment Agency Wales

Kronospan Ltd
Holyhead Road
Chirk
Wrexham
LL14 5NT

Our ref:

Date: 11th August 2011

Dear Dr Earl

Environmental Permitting (England and Wales) Regulations 2010
EA/EPR/BW9999IG
Surface Water Management
EAW Letter 9th August 2011
Kronospan Letter 10th August 2011

Environment Agency Wales agrees to a temporary relaxation to your emission limit values to water as below;

Ammonia temporary elv 5 mg/l,
Formaldehyde temporary elv 2 mg/l.

All other emission limit values in table 4.2 of your permit remain unaltered, as do the monitoring and reporting requirements.

This temporary relaxation is to allow for the completion of stages 1 and 2 of your proposals (as detailed in Agency letter of 9th August 2011) and for the wetland area in stage 3 to become established.

Yours sincerely

Frost

Julia Frost
Regulatory and Community Liaison Officer

Cc Wendy Price, Water Quality Planner

OK FOR PUBLIC REGISTER | INITIALS JF | DATE 11/8/11
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kronospan

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KRONOSPAN LIMITED
Chirk
Wrexham
LL14 5NT
Tel: (01691) 773361
Web Site: http://www.kronospan.co.uk
Telefax: (01691) 773292 Sales
774277 Factory/Purchasing
772316 Secretariat
775239 Timber Buying

Julia Frost
Environment Agency Wales
Chester Road
Buckley
CH7 3AJ

10th August 2011

Dear Mrs Frost

Ref: Surface Water Management

Further to your letter of the 09/08/11 and the acceptance of a three stage improvement project for the Surface Water Lagoons the justification of the twelve months for stage one would appear to be appropriate in view of what needs to be achieved.

First it must be ensured that the prescribed emission limits, reverting back to those prior to 2009, can be achieved and that the lagoon system is stable at these levels.

Secondly the twelve month period would cover the period of the normal natural cycle of variation, (seasonal variation).

Thirdly the set up of the equipment and systems, plus the verification of these, to be able to move to continuous discharge would be approximately twelve months.

Therefore, a twelve month period for stage one would appear to be appropriate.

The points raised in respect to stage two will be addressed and a full response to each item will be given as requested prior to moving from stage one to stage two.

The values for the final emissions limits with the wetland in place and fully functional should be reviewed during stage three, to be able to set the ongoing emission limits.

Finally there was a request for Kronospan to commit to the completion of all three stages of this project. This commitment is given and is supported by the Senior Management at Chirk.

Yours sincerely

Dr Harry Earl
Technical Manager, (Including Environmental Manager)

Reg. in London No. 981905 Reg. Office : Maesgwyn Farm, Chirk, Wrexham LL14 5NT U.K.

KRONOSPAN MODELLING
9th August 2011

Current permit limits
BOD = 9.5 mg/l Ammonia = 3.5 mg/l
SS = 100 mg/l Formaldehyde = 1.5 mg/l
Oil & grease = 15 mg/l pH = 6 – 9

Previous limits :
Ammonia = 5 mg/l Formaldehyde = 2 mg/l

(1) BACKGROUND

Kronospan have requested a temporary relaxation of permit limits for ammonia and formaldehyde to those previously on the permit, so that they can :

- Stop dosing with sodium chloride and sodium bisulphite to control ammonia and formaldehyde
- Switch to continuous discharge ie rate dropping from 80 m3/hour to 19m3/hour
- Construct a largescale wetland to pump the effluent to for treatment prior to discharge to the Bradley

Once all the above is in place, then they should be able to revert to the tighter limits. Anticipated timescale for this work is c. 2 – 3 years.

(2) DATA USED

Kronospan (Quantity)
Current rate of 80m3/hour = 22 l/s – gravity discharge so treat as 99%ile and CoV = 0.33

- Mean = 10.97 l/s & SD = 3.62 l/s

Proposed rate of 19 m3/hour = 5.3 l/s – treat as above

- Mean = 2.64 l/s & SD = 0.87 l/s

Kronospan (Quality - Ammonia)
Current limit of 3.5 mg/l – treat as 95%ile and CoV=1.0

- Mean & SD = 1.26 mg/l

Proposed relaxed limit of 5 mg/l – treat as 95%ile and CoV=1.0

- Mean & SD = 1.8 mg/l

Kronospan (Quality - Formaldehyde)
Current limit of 1.5 mg/l – treat as 95%ile and CoV=1.0

- Mean & SD = 0.54 mg/l

Proposed relaxed limit of 2 mg/l – treat as 95%ile and CoV=1.0

- Mean & SD = 0.72 mg/l

Bradley (Flows)
ADF = 20 l/s & Q95 = 2 l/s

Bradley (Quality - Ammonia)
Took mid RE2 upstream ie 50% of 0.6 = 0.3 mg/l as 90%ile and CoV=1.0

- Mean & SD = 0.15 mg/l

Bradley (Quality - Formaldehyde)
Took 10% EQS upstream ie 10% of 50 ug/l = 5 ug/l as 95%ile and CoV=1.0

- Mean & SD = 1.8 mg/l

(3) RESULTS

Ammonia	Discharge Rate	Permit limit	Downstream Quality (90%ile)	
	22 l/s	3.5 mg/l	1.45 mg/l	Top RE 4
	22 l/s	5 mg/l	2.07 mg/l	Mid RE 4
	5.3 l/s	3.5 mg/l	0.82 mg/l	Top RE 3
	5.3 l/s	5 mg/l	1.09 mg/l	Mid RE 3
Formaldehyde	Discharge Rate	Permit limit	Downstream Quality (95%ile)	EQS = 50 ug/l
	22 l/s	1.5 mg/l	834 ug/l	EQS = 50 ug/l
	22 l/s	2 mg/l	1113 ug/l	EQS = 50 ug/l
	5.3 l/s	1.5 mg/l	397 ug/l	EQS = 50 ug/l
	5.3 l/s	2 mg/l	530 ug/l	EQS = 50 ug/l

(4) SUMMARY

Ammonia

- Current impact (22 l/s @ 3.5 mg/l) = 1.45 mg/l downstream
- Proposed impact (5.3 l/s @ 5 mg/l in the shortterm) = 1.09 mg/l downstream

Formaldehyde

- Current impact (22 l/s @ 1.5 mg/l downstream) = 834 ug/l
- Proposed impact (5.3 l/s @ 2 mg/l downstream) = 530 ug/l

Whilst the discharge continues to cause significant deterioration under the reduced rate, the overall proposal to change to a continuous discharge will actually result in less downstream impact than the current situation of increase rate and tighter concentrations.

It will also mean that Kronospan

- are no longer adding chemicals as part of the treatment process
- are no longer causing potential scouring due to the rate of discharge
- will create a wetland habitat for treatment, with knock-on environmental benefits
- will in the long term propose to revert back to tighter limits after effluent is treated in the wetland

Overall, the temporary relaxation will in the longterm present an overall benefit to the environment, and in the shortterm result in less, immediate impact on the Afon Bradley.

Any plans to relax the permit limits, however, are subject to Kronospan agreeing in writing to implement all stages of their proposal ie change to continuous flow, stop using chemicals and construct wetland habitat for treatment.

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28/07/11

Technical/Environmental

Draft Minutes of the meeting with the Environment Agency

Subject: To discuss the management of the surface water lagoons and a temporary return to the previous discharge limits whilst further improvements are made.

Date: 28/07/2011

Present: Wendy Price, Julia Frost, Harry Earl, James Henderson, Keith Baker

1. The meeting began with the question of how the discharge consent limits were set for Kronospan and why they are so low
2. WP explained that the limits were modelled on the receiving water and the fact it receives little dilution. WP also mentioned Llangefni sewage works work to 2.5mg/l ammonia
3. HE highlighted that Llangefni have a treatment plant to treat the effluent, whilst it is only surface water runoff which collects in the lagoons.
4. HE also stressed that due to the fact Kronospan is a wood-processing site ammonia and formaldehyde will be naturally present.
5. JF asked whether the lagoons will receive less contamination when the logyard is concreted. HE explained that the whole site stores wood and dust is also present on site. This means that concreting the Logyard is unlikely to have a significant impact.
6. The levels in the lagoons over the last year are representative of the levels that will occur and the cyclic behaviour which occurs.
7. JF stated that as part of the Improvement Programme Kronospan were required to investigate the potential to achieve the proposed lower emission limits needed to be investigated.
8. HE explained that a large amount of work was done but the data the agency received in the past was purely discharge data which did not reflect the true picture. Even with all point source pollution eliminated there will still be some level of natural variance of ammonia and formaldehyde due to the nature of the plant.
9. Graphs of the ammonia levels before 2010 and from 2010 to current in the lagoons were shown plus graphs for the discharge in the same period. Only discharge data was recorded pre 2010 which paints an inaccurate picture.
10. JF asked whether the lagoon water was still reused
11. It was explained that it is still used but the previous management strategy of keeping the lagoons full was poor. The management of the lagoons now is so that they are maintained in an empty state so they are able to accept high rainfall events.
12. Friday 22nd July was used as an example of a high rainfall event in which because of proper management the lagoons coped and the water discharged, (1,500 tonnes of water in 15 minutes into the lagoons).
13. The issue of treating the lagoons with hypochlorite was raised. HE explained that we have life in the lagoons and treating it to remove the small amount of ammonia kills it

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off. On occasions of high ammonia Kronospan are unable to reduce the levels by aeration alone as it takes too long to bring the levels down.

14. JF questioned that on occasion the formaldehyde levels have also been high. It was explained that for the majority of these occasions it was due to the addition of hypochlorite affecting the test.
15. JH is responsible for investigating potential causes of high ammonia / formaldehyde in the lagoons. This is done by sampling back from the lagoon.
16. HE then brought up the issue of the two distinct forms of ammonia that are present in natural waters, namely ionised and unionised ammonia. From EA guidance the unionised ammonia is the problem for aquatic organisms. HE produced a graph converting the lagoon total ammonia results into unionised ammonia only (NH_3).
17. JH illustrated the impact pH and temperature has on the concentration of unionised and ionised ammonia. The concentrations of unionised ammonia which had lethal effects were also highlighted on the graph. JH stated that due to the slightly acidic nature of wood unionised ammonia will be very low.
18. HE explained the array of life found in and around the lagoons, which were killed by the addition of hypochlorite. He stressed that this is not what we want but are forced to comply with the permit conditions.
19. Temporary relaxation of the discharge conditions to their previous levels was requested, as part of a three stage development plan, this being stage one. Therefore, in this first stage chemical treatment, with hypochlorite would be stopped. Kronospan stated that they were confident that if the limits are relaxed to the original values on the occasions of high ammonia, this will be able to be treated by aeration rather than the addition of chemicals.
20. HE explained that the next stage would be to move to a continuous discharge at a controlled rate. Monitors would be put in place at the inlet and outlet and the discharge rate controlled via valves.
21. JF stated that when the potential for a continuous discharge was discussed in 2007 EAW highlighted a number of areas that need considering prior to a proposal being agreed.
22. WP stated that it may affect the emission limit values and would need to know the expected discharge rates if it was continually discharged..
23. Finally stage three was explained, moving towards a constructed wetland system to treat the surface water.
24. Companies had already been approached and initial proposals received. JH explained one company had previous experience with creating a wetland for a rival board manufacturer.
25. It was also stated that the system could potentially treat a pollution incident which may occur by installing a cycle feature, circulating the water until clean. An example of 1000ppm of formaldehyde being treated by a wetland in Scotland was used, was cited by one company.
26. The proposed area for the new wetland is outside the existing installation boundary and therefore a permit variation will be required.

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27. JF enquired as to whether the project would be included in the biomass variation application.
28. It was clearly stated that this project would remain separate from other changes/variations that were being planned and that any permit changes/requirements would be dealt with separately.
29. The three stage plan was agreed to in principle but both JF and WP would need to finalise the details. WP requested that discharge rates be provided for the worst case scenario and under normal discharge.
30. KB inquired as to how stage 1 would be initiated. JF answered that, if agreed, a letter would be sent allowing for a temporary relaxing of the emission limit values, back to their previous levels.
31. The time scale for each stage was approximated at a year for the completion of each.
32. JF stressed that if EAW agrees to the proposal a commitment would be needed for the 3 stages. HE answered that top level management had given their backing and initial work had already been carried out.
33. The meeting ended on a very positive note. Kronospan would supply the discharge rate information, provide details of the wetland proposal.
34. EAW will discuss internally and respond in writing.

Keith Baker, James Henderson, Dr Harry Earl

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Technical/Environmental

Points arising and Next Steps from the meeting the Environment Agency

The management of the surface water system at Kronospan Chirk has improved and it should now be possible to improve the integration with the receiving waters – the Afon Bradley. A three stage plan was presented to the EA and the outlines of the next steps are set out.

1. The EA will confirm the general acceptance of the overall plan to resolve the ongoing issues with the surface waters from the Kronospan Chirk site.
2. The first stage will be the trial of relaxation of limits to the previous levels – EA to confirm.
3. The data available from the analysis of the lagoon waters illustrates the full cyclic behavious of the system. The analysis of the waters will be continued to ensure all are fully aware of the true situation.
4. In the data recording files the addition of a section for the conversion to unionised ammonia will be fully implemented.
5. Once the increase has been confirmed, with a time period of provisionally one year, the hypochlorite treatment will be stopped.
6. If high ammonia is detected then the aerators will be used, (as they are currently used), to reduce the level of ammonia, but to only to the higher level.
7. Consideration will be made as to when to carry out a review of the work carried out in 2004 on the water quality of the Afon Bradley. This may be more useful during the second stage of the overall plan.
8. A reporting format will be agreed for this trial period.
9. The next stage of the plan will be continuous discharge.
10. Information on rates of discharge will be supplied for normal conditions and max rates during periods of heavy rainfall.
11. Before proceeding to stage two there will be review meetings.
12. The final stage of a managed wetland is in planning and companies have supplied outline proposals and have been engaged to provide further information to progress this part of the plan.

Dr Harry Earl