14. UV DISINFECTION TRIALS

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Corporate Plan Output: Liquid Waste Asset Management Improvement	

The purpose of this report is to update the Committee on preliminary results of Ultra Violet Disinfection Trials at the Christchurch Wastewater Treatment Plan Oxidation Ponds.

BACKGROUND

In March 2000 Disinfection trials were approved by this Committee. The trials were aimed at proving the effectiveness of current UV technology in treating oxidation ponds effluent and in testing the effectiveness of a new technology claimed to disinfect effluent for a much lower power input.

PRELIMINARY RESULTS

Several rounds of testing have been completed so far. The results clearly indicate that UV disinfection can successfully reduce pathogen numbers. The testing so far clearly demonstrates significant reduction in coliforms and bacteriophage, which are relatively hardy organisms. Test results also show significant reduction in viruses by 2 to 3 orders of magnitude ie 100 to 1000 times reductions and smaller reductions in giardia.

The results have been measured following seeding of the test water with the bacteriophage, viruses and giardia. This is necessary, as there are very low numbers of these pathogens in the oxidation pond effluent.

These results are very encouraging as they clearly show that UV disinfection can be successfully used for disinfection of pond wastewater. Further testing is still required to determine the correct UV dose to achieve a given reduction in a particular organism.

The second part of this intended programme is to quantify the claims of the suppliers of this new technology to provide the required level of pathogen reduction at a significantly reduced power input compared to conventional UV technology. It is clear that the new technology uses a lot less power, however further testing is required to quantify this aspect in relation to the required pathogen reduction.

The electrocution technology being developed at the University of Canterbury is also being trialed with oxidation pond water. One of the challenges for this technology is to overcome the impediment posed by high ion concentration in the water and the need to de-ionise the water prior to treatment. Some progress has been made on this aspect, however this technology and the claimed low power technology are both in the early stages of development.

SUMMARY

Initial results of testing are encouraging and indicate that UV technology can be successfully used on oxidation pond effluent for disinfection. Further testing runs are required to more clearly quantify and consolidate the results indicated in earlier testing runs and to quantify the relative power inputs of the different technology options. Further development of the electrocution technology will also continue.

Chairman's Recommendation: That the information be received.