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SUMMARY: Summary summary

1. INTRODUCTION

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2. FUNDAMENTALS OF CHEMICAL OXIDATION

2.1 Organics and other compounds in biodegraded leachate

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2.2 Oxidation processes

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2.2.1 Wet oxidation

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2.2.2 Hydrogen peroxide

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Table 1. Oxidation potential for some oxidants (Fraser and Sims, 1984). *(In case of longer Table legend, please indent as here shown)*

Oxidant	*Reactions*	*Oxidation Potential (volts)*
Hydroxyl radical	$OH^{\bullet} + H^{+} + e^{-} \rightarrow H_2O$	2.80
Ozone	$O_3 + 2H^{+} + 2e^{-} \rightarrow H_2O + O_2$	2.07
Hydrogen peroxide	$H_2O_2 + 2H^{+} + 2e^{-} \rightarrow 2H_2O$	1.77
Permanganate	$MnO_4^{-} + 8H^{+} + 5e^{-} \rightarrow Mn^{2+} + 4H_2O$	1.52
Chlorine dioxide	$ClO_2 + e^{-} \rightarrow Cl^{-} + O_2$	1.50
Chlorine gas	$Cl_2 + 2e^{-} \rightarrow 2Cl^{-}$	1.36

2.2.3 Hydrogen peroxide

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The production of radicals can be described as follows:

$$H_2O_2 + \text{UV radiation} = 2OH^{\bullet} \qquad (1)$$

OH radicals react very fast. The simplified oxidation reaction can be written as follows:

$$OH^{\bullet} + \text{organic substance} + \text{UV radiation} \rightarrow H_2O + CO_2 + \text{organic residues}$$

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2.2.4 Ozonization

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2.3 Electrochemical processes

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3. EXPERIMENTAL STUDY

3.1 Apparatus

3.1.1 Electrochemical cell

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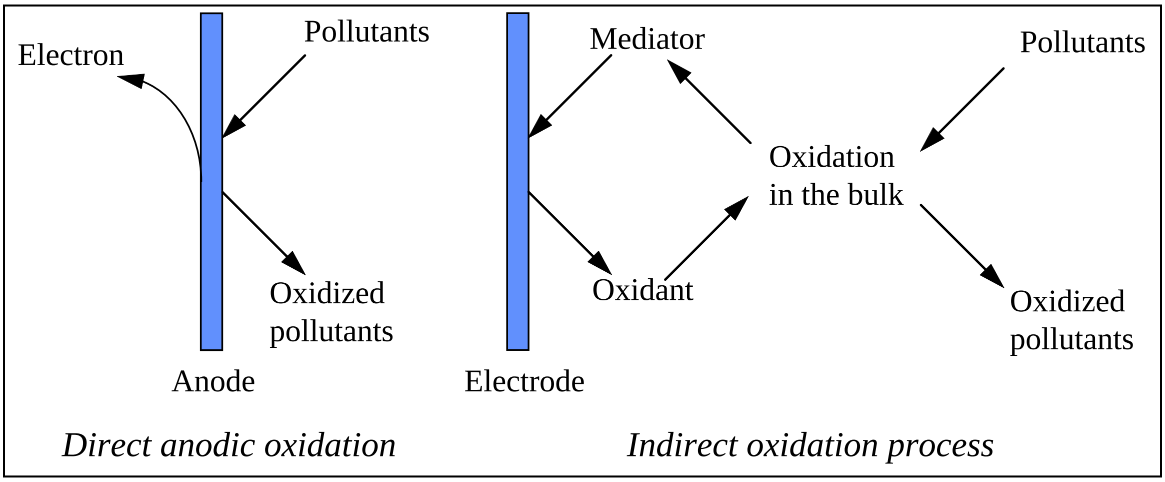

Figure 1. Scheme of pollutant removal pathways in electrochemical oxidation process (after Li-Choung Chiang et al., 1995). *(please indent as here shown)*

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3.2 Experimental procedure

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4. RESULTS AND DISCUSSION

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5. CONCLUSIONS

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