1 **Electronic Supplementary Information**

2 for

3 **Iron–electrocoagulation as a disinfection byproduct control strategy for drinking water**

4 **treatment**

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16 The Electronic Supplementary Information consists of 3 pages, including 3 sections, 1 figure,
17 and 2 tables:
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19 ESI 1: Faradaic efficiency of electrocoagulation experimental conditions
20 ESI 2: The impact of electrocoagulation on effluent water pH
21 ESI 3: Residual iron and free chlorine following electrocoagulation treatment
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ESI 1. Faradaic efficiency of electrocoagulation experimental conditions

The faradaic efficiency was assessed for electrocoagulation, results of which are shown in Table S1. The electro-generated iron doses were not statistically different between the pH conditions (p=0.3).

**Table S1**. Iron dose following electrocoagulation and the corresponding faradaic efficiency. Values are the averages of triplicate tests ± 1 standard deviation.

Sample	pH 6 Model River Water	pH 8 Model River Water
Electrocoagulation Iron dose, mg-Fe/L	29 ± 1.7	30 ± 0.14
Faradaic Efficiency, %	83 ± 4.8	86 ± 0.41

ESI 2. The impact of electrocoagulation on effluent water pH

Electrocoagulation generally did not increase pH relative to the control samples for initial pH levels of 6 and pH 7 (Figure S1). However, EC at initial pH 8 raised the resulting pH relative to the no EC control tests. During the control experiments, the water matrix pH was adjusted to the target initial conditions, and the tests were conducted following the same procedure as EC experiments without undergoing electrolysis. The pH was measured after the 20 minute settling period.

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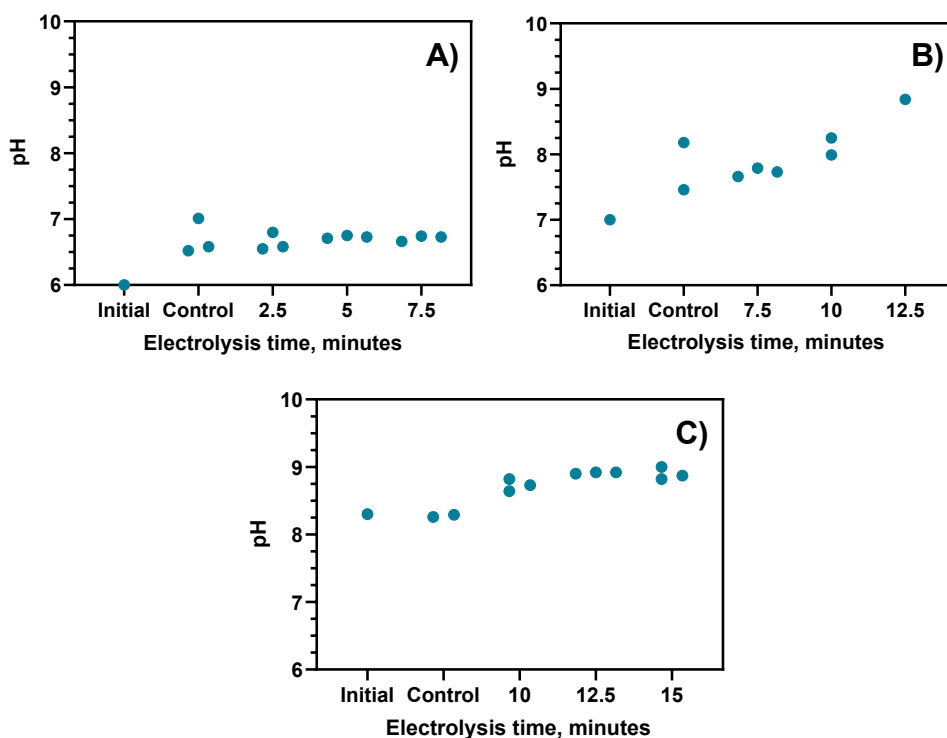
Figure S1: Final pH after electrocoagulation treatment at a range of electrolysis times at
different initial pH conditions. A) initial pH = 6, B) initial pH = 7, and C) initial pH = 8.3.
Control experiments were conducted by adjusting pH and mixing the sample without
electrolysis. Each point is a single replicate.

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ESI 3: Residual iron and free chlorine following electrocoagulation treatment

45 Residual iron and free chlorine levels following electrocoagulation treatment of the

46 model river water are shown in Table S2.

47 **Table S2**. Total iron, soluble iron, and free chlorine generation following electrocoagulation.
48 Values shown are the averages of triplicate tests ± 1 standard deviation.

Sample	Theoretical Coagulant Dose mg-Fe/L	Total Iron mg-Fe/L	Soluble Iron mg-Fe/L	Free Chlorine mg-Cl$_2$/L
EC, pH 6, 5 minutes	35	5.8 ± 1.1	0.005 ± 0.004	0.07 ± 0.04
EC, pH 8, 17.5 minutes	140	4.62 ± 0.5	0.035 ± 0.011	0.05 ± 0.05

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