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The role of surfactants in wastewater treatment: impact, removal and future techniques: A critical review

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1 **The role of surfactants in wastewater treatment: impact, removal and future techniques: A**
2 **critical review**

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8
9 **Abstract**

10 Wastewater treatment has an important responsibility to react to changing consumer and
11 industrial produced wastes that pose environmental challenges. Surfactants are one of these
12 emerging contaminants. They are of interest because of their increasingly ubiquitous domestic
13 and industrial use and the difficulty their presence causes traditional treatment. In response to
14 this developing area, this critical review considers research from a variety of technical
15 backgrounds to provide an up to date overview of the impact of surfactants on the environment,
16 health and their removal. This found major concerns about surfactants on the environment and
17 on health being corroborated in the past five years. Current research into removal focuses on
18 existing biological and chemical wastewater treatment optimisation. Despite improvements being
19 found to traditional biological methods using chemical pre-treatments there is a clear lack of
20 consensus regarding the ideal strategy. Drawbacks and potential solutions for a range of these
21 technologies, including Fenton reaction and aerobic degradation are discussed. In this field the
22 authors recommend an improved diversity in surfactants used for the research and addressing of
23 significant knowledge gaps. Novel methods, such as Carbon Nanotube (CNT) use are also
24 discussed. These methods, while showing promising results, will require continual research effort
25 to resolve present issues such as variable performance and environmental concerns. Larger scale

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