# Jellyfish - an unexpected threat for seawater intakes *

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**ABSTRACT ***

Industrial utilities use large volumes of seawater to cool their processes or to make potable water. However, in addition to seawater biological material like jellyfish, schools of fish, and seaweed may enter the seawater intake and, if they occur at densities high enough to overwhelm screening systems, can pose an operational risk for such facilities. Under normal conditions ingress of biological material is handled by the screening systems and does not impact the operational reliability of the seawater supply system. However, a widespread jellyfish bloom in the Sea of Oman that was observed in autumn 2019 and spring 2020 has led to the development of abnormal biomass densities which has challenged the capability of screening systems to cope and has highlighted the operational risks arising from such events. Several coastal facilities in Oman and UAE have reported unplanned shutdowns being triggered by high jellyfish densities leading to significant production losses. Such losses have a high-cost impact if the utility cannot comply with its contractual obligations which can lead to financial penalties. In addition, the biomass entering the system can cause in structural damage to the screening system itself and poses further operational challenges around how to handle and dispose of the screenings.

Strong seasonality is a general feature of the oceanography and ecology of the Sea of Oman upwelling system but jellyfish blooms in this region are unpredictable and no apparent link to seasonal patterns has been established yet. If a link to the strength of the Indian monsoon system plays a role in triggering jellyfish blooms, it is likely that climate change would cause the frequency of blooms to increase and with it the risk to coastal industries in Oman and UAE in

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future years. This presentation provides some insights into the jellyfish bloom in the Sea of Oman and how coastal industries in Oman and UAE can become more resilient to this phenomenon such as developing early warning systems, excluding jellyfish from the intake, and strengthening screening systems.

Mr. Harry Polman is owner and Managing Director of the company H2O Biofouling Solutions B.V. With 25+ years of experience in the field of biofouling control in seawater intake/cooling systems, Mr. Polman is recognized as an international expert in the field of Biofouling control and defining biofouling control strategies for both existing and new to build facilities. He is also involved in projects to prevent ingress of biological material in seawater intakes. He has authored or coauthored several international papers, book chapters and consulted in more than 250 Biofouling related projects worldwide.

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