**Arabian Gulf Harmful Algal Blooms Workshop - programme**

**DAY 1 (22 February, 12:00-15:00 UK time)**

**Understanding the susceptibility of the Arabian Gulf and adjoining sea areas**

**to harmful algal blooms (HABs) and impacts on fish health and food safety**

Session chair: Quasie Karam

1. Welcome – representative from UK-Kuwait programme (5 min)
2. Aims of the workshop – Qusaie Karam – Kuwait Institute for Scientific Research (KISR) (5 min)
3. Global perspective on HABs, environmental drivers & impacts – Elisa Berdalet (IOC SCOR GlobalHAB program) (20 min)
4. Regional HAB events and impacts on fisheries/aquaculture in the Regional Organization for the Protection of the Marine Environment (ROPME) Sea Area (RSA):

* Sea of Kuwait – Environmental mechanisms associated with algal blooms in the Arabian Gulf - Yousef Al-Osiri (KISR) (20 min)
* Sea of Oman - Decision and Information System for the Coastal Waters of Oman - Ms. Suad Al-Bemanyah (Ministry of Agricultural Wealth, Fisheries and Water Resources, Oman) (20 min)

1. Break (15 min)
2. Environmental extremes and additional pressures on marine ecosystems in the RSA – Michelle Devlin (CEFAS) (20 min)
3. Linking environmental factors, HAB events and impacts on fish and shellfish - Ross Brown (University of Exeter), Adam Lewis (CEFAS) (20 min)
4. Discussion on sampling strategies, tools and data availability, integration and analysis (15 min)

**DAY 2 (23 February, 12:00-15:00 UK time)**

**Developing early warning systems (EWS) for HABs for mitigating impacts on fisheries and aquaculture**

Session chair: Ross Brown

1. Recap on aims of the workshop – Qusaie Karam (KISR) (5 min)
2. Understanding impacts of HABs on fish farms and *vice versa* based on lessons learned in:

* Chile - Jorge Mardones (CREAN) (15 min)
* Control of HAB impacts on aquaculture in China using a modified clay approach - Isaac Yongquan Yuan (CAS) (15 min)

1. Existing HAB observation and EWS in the RSA

* Kuwait Territorial Waters - EWS for HABs and fish kill Incidents Qusaie Karam (KISR) (15 min)
* Eastern Gulf and Sea of Oman - Gilan Attaran-Fariman (Chabahar Maritime University, Iran) (15 min)

1. Break (15 min)
2. Other observation and EWS for HABs

* Early Warning Systems in Chile - Alejandro Clément (Plancton Andino, Chile) (15 min)
* Early Warning Systems in North America - Raphe Kudela (University of S California) (15 min)
* Changes and complexity of HABs in Asia - Patricia Glibert (University of Maryland) (15 min)
* Early Warning Systems in the UK - Keith Davidson (SAMS) (15 min)

1. Break (15 min)
2. Discussion on next steps for further developing a HAB EWS for the RSA (30 min)

* What are key data/ knowledge gaps and research priorities?
* Data linking HAB occurrence and fish kills?
* Funding opportunities?

1. Sum up and close workshop (Ross Brown, Elisa Berdalet Po Teen Lim) (10 min)