Seminário American Corner – Joan B. Rose e J. Saldanha Matos

24 Março
Técnico Lisboa - Campus Alameda

"Water Quality: challenges and perspectives", com a professora Joan B. Rose e o professor José Saldanha Matos.

Michigan State University

No dia 24 de março de 2020, terça-feira, entre as 15h30 e as 17h30, realizar-se-á um Seminário American Corner@IST, subordinado ao tema "*Water Quality: challenges and perspectives*", com a prof. Joan B. Rose e o prof. José Saldanha Matos.

Programa

15:30 – *Welcome remarks & Introduction*
Ricardo Santos, PhD, Research at LAIST (Laboratório de Análises Clínicas do Técnico)

15:35 – *Seminar's keynote speaker*
• "**Problems, Challenges and Solutions of the Sanitation Sector in Developing Countries**" (*)
• professor José Saldanha Matos,
Department of Civil Engineering, Architecture and Georesources (Scientific Area of Hydraulics, Water and Environmental Resources), at Instituto Superior Técnico, Universidade de Lisboa, Portugal;

16:20 – *Seminar's keynote speaker*
• "**Imperatives for Control of Global Waterborne Pathogens**" (**)
• professor Joan B. Rose, International Expert in Water Microbiology, Water Quality and Public Health Safety,
Homer Nowlin Chair in Water Research, Michigan State University, USA.

16:55 – *Discussion and Questions & Answers*

Local: Pavilhão de Informática I, Anfiteatro FA2

Contacto IST|AC – Responsável: professor Hermínio Diogo

(*) **Resumo**
Palestra do prof. **J. Saldanha Matos** (jose.saldanha.matos@tecnico.ulisboa.pt)
WHO/UNICEF 2017 estimates indicated that 2.3 billion people lack access to "improved sanitation". Of these, 892 million people worldwide still practised open defecation. Globally, namely in developing countries, the management of wastewater and faecal sludge facilities continue to face dramatic changes caused by the increasing urban population, climate change impacts, diminishing resources, rising service expectations of costumers and increasingly stringent regulatory requirements. All of this is requiring innovative approaches and solutions.
In the presentation, some of the problems, challenges and solutions for the sanitation of urban and peri-urban areas of developing countries will be outlined.

(**) **Resumo**
Palestra da prof. **Joan B. Rose** (rosejo@msu.edu)
There are 16 critical infrastructure sectors whose assets, systems, and networks, whether physical or virtual, are considered so vital to countries world-wide including the United States, that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof. https://www.dhs.gov/critical-infrastructure-sectors.
Water is one of those critical pieces and is part of the world's life support systems on which the Blue Planet depends upon. Lloyd's City Risk Index of 301 cities shows that natural threats including floods and human disease pandemics are among the top risks estimated to potential cost $2.43 trillion dollars.
In the last 60 years we have seen a great acceleration of population growth (in people and animals), land use change, use of fertilizers, and water. This has led us into the anthropocene where continued water quality degradation as demonstrated by increased eutrophication and fecal contamination associated with microbial hazards and antibiotic resistance is a global phenomenon.
Waterborne diseases in humans are characterized by pathogens including bacteria, parasites and viruses, which are persistent, potent, excreted at high numbers and zoonotic. Through the use of new DNA tools, specific hazards are now identifiable (through microbial source tracking and pathogen specific diagnostic testing). However, effective and efficient mitigation still requires disinfection. Most regulatory approaches suggests that we must remove 99.9% or 99.99% of pathogens in wastewater and drinking water to maintain low risk and enhance safety and can not be achieved without disinfection.
The new Global Water Pathogens Project has now produced an online book "Sanitation and disease in the 21st Century: health and microbiological aspects of excreta and wastewater management" an open-access data base and knowledge platform, to serve as an update on water pathogens and to disseminate information relating to efficacy of treatment technologies and quantitative data to support risk assessment (http://www.waterpathogens.org /). The project has over 140 authors from all over the world that have contributed to each pathogen specific chapters and cross cutting chapters Sanitation Technologies and Disinfection agents and their effectiveness at removing and inactivating pathogens (bacteria, viruses, protozoa, and helminths). and distributed to the global population.
Concentrations of bacteria, helminths, protozoa and viruses in wastewater (as high as 1012 /L) and excreta, their persistence in the environment and resistance to fecal wastes and wastewater treatment are now

highlighted. Sharing the knowledge on these pathogens is now imperative and there is a need to establish global water science initiatives and tools for access to this data to meet the goals for public health protection and the SDGs by 2030.