UV-DOX Reactor - Synopsis

Introduction

A lifetime commitment to Petroleum Industry engineering and two prior patent developments, culminated in 'Refining Air Quality' by 'Redefining Pollution Control' with a unique multi-purpose 'UV-DOX Reactor' design by Reinhard Schuetz, P. Eng.

'Status-quo' air purification devices typically consist of absorption, adsorption, scrubbing or filtration methods. The UV-DOX Reactor's superior mitigation of biological organisms, odour and chemical contamination is achieved via actual germicidal DNA destruction and breaking molecular bonds of chemical compounds.

Aside from being affordable and compact, UV-DOX Reactor 'value-added' features entail simple maintenance, reduced operating cost, improved health and enhanced safety, as well as HVAC energy conservation due to reduced obligatory air change requirements. Toxic chemical, noxious odour and biological hazard mitigation may be achieved at living, work and recreational places – keeping in mind that critical to successful pollution control is "harmful contaminant destruction at the source".

Background

Toxic chemical emissions and enclosed space germ-laden air circulation systems are common instigators of serious detrimental health, safety and environmental issues affecting humans, animals and vegetation.

Annual premature human deaths related to air contamination is estimated at about 7,700 in Canada (Institute of Sustainable Development, 2015); 200,000 in the USA (MIT, 2013), and a staggering 7 million globally (WHO, 2016).

In N. America, about 500k service station tanks emit an estimated 1 billion litres/year of carcinogenic Benzene laden gasoline. More over, about 4 million registered storage tanks and untold facility/equipment emissions continuously vent toxic substances.

Other notable potential pollution sources are: soil remediation; pulp/paper facilities; power plants; wastewater/sewer systems; transport industries; petro-chemical operations; cannabis grow-ops; gas burning stoves/furnaces; animal handling facilities; commercial outlets handling chemical by-products; etc.

Also becoming more prevalent are health concerns related to air contamination caused by harmful bio-contaminants and synthetic material off-gassing within enclosed spaces such as: schools; arenas; residential accommodations; work spaces; offices; hotels; medical centres; hotels; senior care complexes; kindergartens; cruise ships; airplanes; convention centres; greenhouses; public washrooms; zoos; etc.

Large polluters are normally regulated and monitored. Unfortunately, individual small-scale contaminations, although just as detrimental to living organisms, are mainly ignored and typically considered un-economical to control.

UV-DOX Reactor – Synopsis (cont'd)

Technology

Efficient microbial elimination by UVC alone is highly dependent on close proximity and lengthy contact time. By additionally incorporating a Hydroxyl Radical generating coating and multi-baffle system design, the 'UV-DOX Reactor' features enhanced capability of also effectively breaking molecular bonds of toxic chemicals. Compared to a typical single lamp flow-through configuration, the Reactor achieves superior destruction of contaminants with about 8x longer retention time and 11x larger photo-catalytic coating area, as well as consistent close flow proximity to both the UVC lamp and coated surfaces. In addition, internally generated UVC lamp 'heat' initiates melting of the protective envelope around germs, allowing for easier DNA destruction access for the UVC light and Hydroxyl Radicals.

Certified testing (AGAT Laboratories) of the 'UV-DOX Reactor' achieved destruction of **99.9%** *lethal* Sulfur Dioxide, **99.6%** *hazardous* Formaldehyde, **99.5%** *toxic* Ammonia, **98.5%** *deadly* Hydrogen Sulfide, **97.9%** *carcinogenic* Benzene and **96.4%** *dangerous* Nitrogen Oxides – resulting in 'mitigation and neutralization' of not only toxic chemicals but also biological organisms.

Conclusion

There seems to exist a general misconception that individual small-scale pollutions are insignificant and easily dealt with in the atmosphere. In fact, the combined volume of such contamination creates significant harmful environmental, safety and health effects. The UV-DOX Reactor is no only suitable for virtually any residential, commercial, industrial and/or agricultural associated installation, but also potentially accomplishing 'energy conservation' benefits by allowing the curtailment of existing HVAC air change requirements, yet still attain 'air purification' within confined work, living and/or recreational spaces.

Average daily consumption per person is about 1kg Food, 2kg Water and … 20kg Air! We constantly expect and demand Fresh Food and Pure Water … why not Clean Air?

Additional information and 2 Minute whiteboard animation video is available on the UV-DOX website www.uv-dox.com.

REFINING AIR QUALITY by REDEFINING POLLUTION CONTROL

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