

The Operating Theater: A Source for Environmental Health Threat

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In my lecture, I would like to emphasize the importance of taking active measures to reduce waste and energy consumption as a mean to reduce the release of CO₂ and other pollutant to the soil and atmosphere. At hospital level, motivations for conserving energy are ecological reasons: climate protection, environmental awareness, waste minimization and recycling, economic reasons: cost saving and public relations: sign of quality, perception as ethically motivated. The young generation holds powerful influence on company/hospital managements – the pressure starts from the bottom!

Possible energy saving measures are: Partial shut-down of A/C in not-running O.Rs at night, replacing the light fixtures, connecting hospitals to direct gas supply, a Combined Heat and Power Technology, which provides huge saving in cost of hot water supply, and self-generation of electricity. Hospitals should adopt waste reduction projects, such as organic waste, plastic single use bags, utensils & medical equipment. We should remember: Environment and economy are not opposites - they can be reconciled!

When we speak on anaesthesia, millions of gallons of volatile anesthetics (VA) are released into the atmosphere each year globally, at a huge cost, both financially and environmentally. 95% of the VA are released unchanged to the atmosphere. The VA produce a major greenhouse effect and aggressive depletion of the ozone layer, with a life span of decades in the atmosphere. N₂O is also causing ozone depletion. In recent years, the awareness towards the overall contribution of the VA to global climate change and to their environmental sustainability developed a major attention in the large anesthesia societies and evoked the need to open special Task Forces to deal with operating theater waste hazards.

In my lecture, I would like to emphasize, also, the importance of neutralizing VA, rather than just evacuate them from the O.R. through the scavenging systems to the atmosphere, for the sake of humanity and for better environmental consciousness.

Anesthesiologists control emission of VA by various methods, including low flow anesthesia techniques, scavenging VA emitted from the anesthesia machine, creating an open system, to accelerate patient awakening, and in special disease states, such as malignant hyperthermia. However, an overwhelming majority of general anesthesia cases ends with VA being discharged into the atmosphere unchanged.

In the coming years, unless a solution to limit waste anesthetic insult to the environment will be found, a strong inclination to ban certain anesthetics may be predicted.

Health care facilities that use anesthetic gases are accountable for ensuring that all anesthesia equipment will include an effective scavenging system, so the O.R. staff will not be harmed. However, lack of regulatory code, which will prohibit the emission of the waste VA to the atmosphere, is limiting the motivation of health institution to deal with the problem.

There are three possible methods to deal with waste VA: 1. Extraction and purification of the VA for repeated use. 2. A scavenging device, which contains active carbon, which will neutralize all waste VA released in O.Rs. 3. A scavenging device, which will oxidize the VA, and will be able to disconnect the strong bonds of carbon-fluor, to unharmed salts.

Adoption by hospital of an effective VA filtering device, among other methods to limit operating room waste, will improve the institute image as "green" and environmentally friendly.