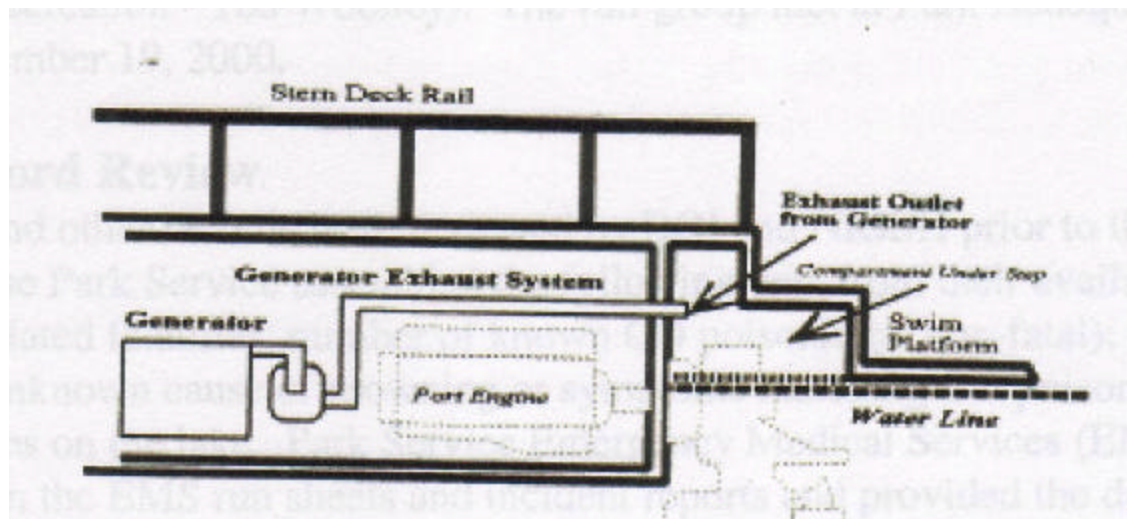


## Carbon Monoxide Poisoning

This case study involves two young children swimming off the rear platform of a houseboat and overcome by carbon monoxide.

### The Situation

On August 2, 2000, after an evening meal, the occupants of a multi-owner houseboat, started a gas powered electrical generator so that they could operate the air conditioner and view video tapes on television on-board. The generator vents at the rear of the vessel.



After the generator had been operating for approximately ten to fifteen minutes, two boys, ages 8 and 11 years) swam into the area between the swim platform and the stern of the vessel. Other children that were in the water swimming with the two boys began screaming when they realized that the boys were in trouble. When adults entered the water to try to save the boys, the adults were unable to find them. Emergency medical personnel were also unable to locate the boys that evening. The two boys' bodies were pulled from the bottom of the lake (30 feet below the vessel) the next morning. The boys died from carbon monoxide poisoning. They were overcome by CO in the confined space below the swim platform, lost consciousness, and sank.

The Federal Register Vol. 66, No. 14/ Monday January 22, 2001 has a Coast Guard Advisory to Recreational Boaters listing the hazards of Carbon Monoxide caused by generator exhaust. Operators of vessels that have generators exhausting on the transom should not use the swim platform at the stern when the generators are in use. Under no circumstances should any persons enter the area between the swim platform and the transom of the vessel while a generator is in operation. The extremely high levels of CO in these confined spaces will overcome an individual very quickly.

It is important that other types of boat operation that could cause individuals to be overcome by CO be known. Simple idling of engines and infiltration of cabin environments can be dangerous.

### **Awareness Items**

CO is a odorless, tasteless, colorless gas produced by incomplete combustion of carbon based fuels.

The initial symptoms of CO poisoning may include headache, dizziness, drowsiness, or nausea.

The secondary symptoms of CO poisoning may include vomiting, loss of consciousness, and collapse.

Coma and or death may result if high exposure to CO continues.

CO binds with hemoglobin in the blood thereby reducing the oxygen concentration in the blood.

Blood has a 210-250 times greater affinity to CO than Oxygen. CO remains in the blood for prolonged periods after exposure. The half life of CO in the blood is approximately five hours. The concentration of CO in the blood reduces by half every five hours. Aggressive oxygen therapy reduces the half-life.