

U.S. COAST GUARD
MARINE SAFETY OFFICE PORTLAND, MAINE

SAFETY ALERT

Pyrophoric Carbon

In May of 1996 U.S. Coast Guard personnel conducting a voluntary dockside examination in the mid coast region of Maine found a lobster boat with an advanced condition of pyrophoric carbon in the vicinity of the deck penetration for the vessel's dry exhaust stack.

Pyrophoric carbon is a form of charcoal that can occur if wood is periodically exposed to elevated heat sources over a long time, in some instances requiring years to develop.

The formation of pyrophoric carbon is extremely dangerous, because the carbon material will continually reignite when re-exposed to elevated temperatures typical in the vicinity of an engine or exhaust stack. Eventually, this will ignite the surrounding wood material and can result in a significant fire that can easily cause extensive damage or the loss of a vessel.

The formation of pyrophoric carbon requires prolonged exposure of wood to elevated heat sources (250 F) in an area without a significant flow of air. The bilges and engine compartments of commercial fishing vessels can be perfect environments for pyrophoric carbon to develop, especially in the immediate vicinity of engines and exhaust stacks.

Vessel operators should carefully inspect their vessels for this dangerous condition to reduce the risk of fire. A thorough inspection should include bulkheads and the underside of decks in the vicinity of engines and exhaust stacks. Pay particular attention to deck beams and carlins located near deck penetrations of dry exhaust stacks, serious formations of pyrophoric carbon have been identified in this hard to access location.

Pyrophoric carbon can also form in the vicinity of galley stove exhaust stacks, behind ovens and at any other location exposed to elevated temperatures.



This photograph shows pyrophoric carbon at a stack penetration on a small fishing boat. Wood disintegrating into fibers may warn of future pyrophoric carbon formation and should be removed.

In the event pyrophoric carbon is located onboard your vessel, it should be immediately removed to prevent ignition of a larger fire. To do this use a sharp chisel or rasp to cut away the carbon formation until sound wood is exposed. Prevent further formation of pyrophoric carbon by wrapping exhaust stacks with fiberglass insulating tape or installing metal heat shielding. **Do not** use combustible insulating materials (materials which melt or burn) in an attempt to control pyrophoric carbon.

For further information on this Safety Alert please contact:

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