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The National Aeronautics and Space Administration (NASA) seeks partners interested in the commercial application of the Activated Metal Treatment System (AMTS) for treating polychlorinated biphenyls (PCBs) in paints. NASA's Kennedy Space Center is offering companies licensing or partnering opportunities in the development of this innovative remediation technology.

Current physical removal methods are able to strip off PCB-containing paint from surfaces (e.g., media blasting); however, these methods typically create a new waste stream that must be treated according to Toxic Substances Control Act (TSCA) regulation. In contrast, AMTS extracts PCBs and breaks them down into benign by-products while on the structure. Therefore,

BENEFITS

- No impact to structure—does not affect the material beneath the paint and allows for the surface to be repainted/reused following application.
- In situ—treats PCBs in place, versus traditional abatement methods that generate a secondary Toxic Substances Control Act (TSCA) waste stream.
- Cost-competitive—requires none of the costs associated with placing a building under vacuum or transporting, treating, and/or disposing of a secondary waste stream. Preliminary estimates indicate that AMTS could cost less than $15 per square foot for materials (not including labor). In addition, total costs (materials plus labor) are anticipated to be less than comparable costs for media-blasting.
- Effective—has been shown in lab-scale and field-scale tests to remove approximately 80% of PCBs from paint (three layers in thickness with initial PCB concentration as high as 700 parts per million [ppm]) within 4 hours, and approximately 100% of PCBs within 48 hours.
- Safe—produces benign by-products.
- Versatile—can be used as a "paint-on/wipe-off" method for in-situ applications or as an immersion method (e.g., for dismantled parts awaiting disposal).

www.nasa.gov
no additional treatment for PCBs is required. Also, because the
treated surface can be reused following application, AMTS has
advantages over other methods and often opens up recycling
opportunities that would not have been possible prior to AMTS' application.

Technology Details
PCBs have been shown to cause cancer in animals and to
have other adverse effects on immune, reproductive, nervous,
and endocrine systems. Although the production of PCBs in
the United States has been banned since the late 1970s, many
surfaces are still coated with PCB-laden paints. The presence
of PCBs in paints adds complexity and expense for disposal.
Some treatment methods (e.g., use of solvents, physical
removal via scraping) are capable of removing PCBs from sur-
faces, but these technologies create a new waste stream that
must be treated. Other methods, like incineration, can destroy
the PCBs but destroy the painted structure as well, preventing
reuse.

To address limitations with traditional abatement methods for
PCBs in paints, researchers at NASA's Kennedy Space Center
(KSC) and the University of Central Florida have developed
the Activated Metal Treatment System (AMTS) for Paints. This
innovative technology consists of a solvent solution (e.g.,
ethanol, d-limonene) that contains an activated zero-valent
metal.

AMTS is first applied to the painted surface either using
spray-on techniques or wipe-on techniques. The solution then
extracts the PCBs from the paint. The extracted PCBs react
with the microscale activated metal and are degraded into
benign by-products. This technology can be applied without
removing the paint or dismantling the painted structure. In addi-
tion, the surface can be reused following treatment.

Partnership Opportunities
All NASA licenses are individually negotiated with the prospec-
tive licensee, and each license contains terms concerning
commercialization (practical application), license duration,
royalties, and periodic reporting. NASA patent licenses may be
exclusive, partially exclusive, or nonexclusive. If your company
is interested in the new Activated Metal Treatment System
for Paints technology, or if you desire additional information,
please reference Case Number KSC-12878 and contact:

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**A New Formulation for the removal and remediation of Polychlorinated Biphenyls in Painted Structures**

**Abstract**

This new technology report will describe the laboratory development of a new and innovative solution for the removal and destruction of PCBs found in painted structures or within the binding or caulking material on structures. The technology incorporates a Bimetallic Treatment System (BTS) that extracts and degrades only the PCBs found on the facilities, leaving in most cases the structure virtually unaltered.

**Subject Terms**

solution, removal, bim

**Security Classification of:**

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