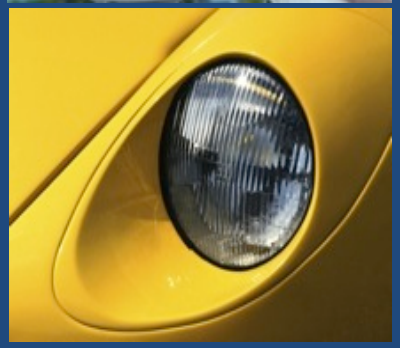

NASF Update

SBEAP Trade Panel Roundtable
Chicago, IL
May 15, 2019

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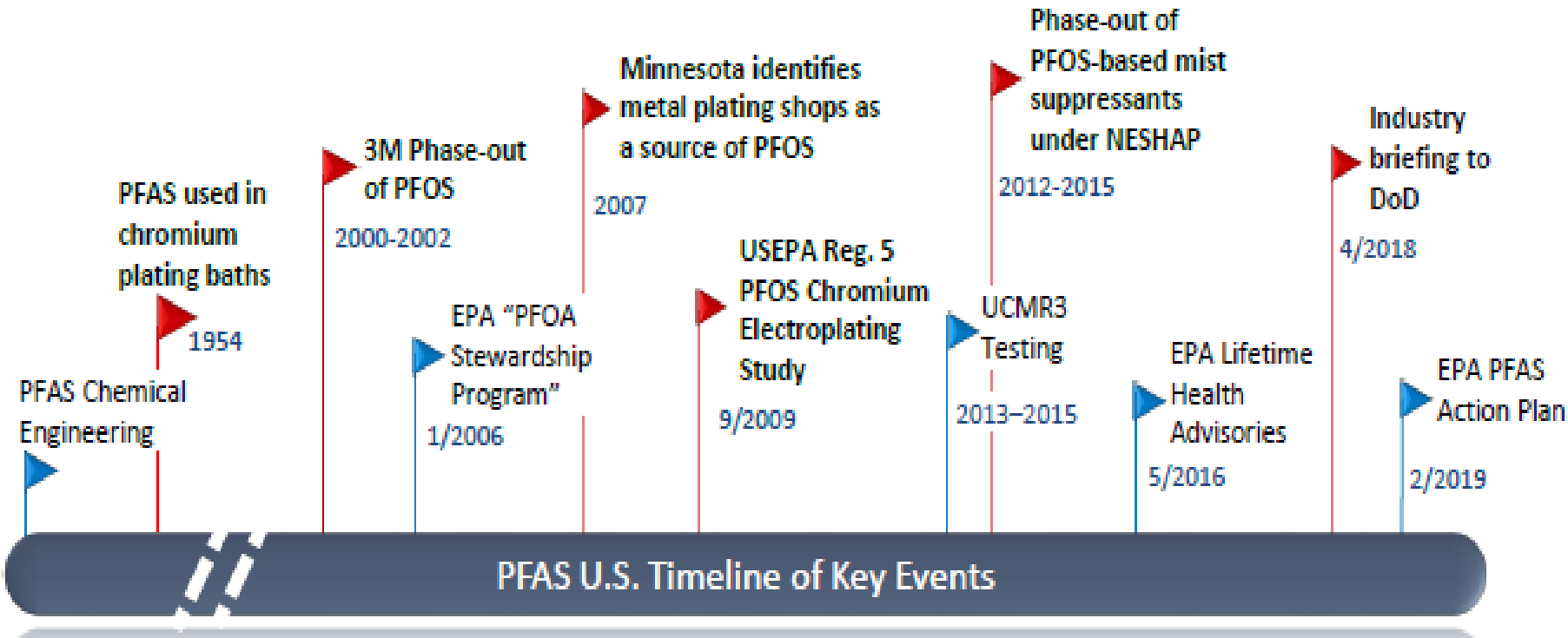
Industrial & Commercial Uses of PFOS

- Fire fighting foam
- Textiles and leather – stain and water repellant
- Fume suppressant for chromium electroplating processes
- Paper and packaging
- Wire coating and insulation
- Surfactants, resins, molds and plastics
- Food surfaces – Teflon, fast food containers, microwave popcorn bags
- Household cleaning products

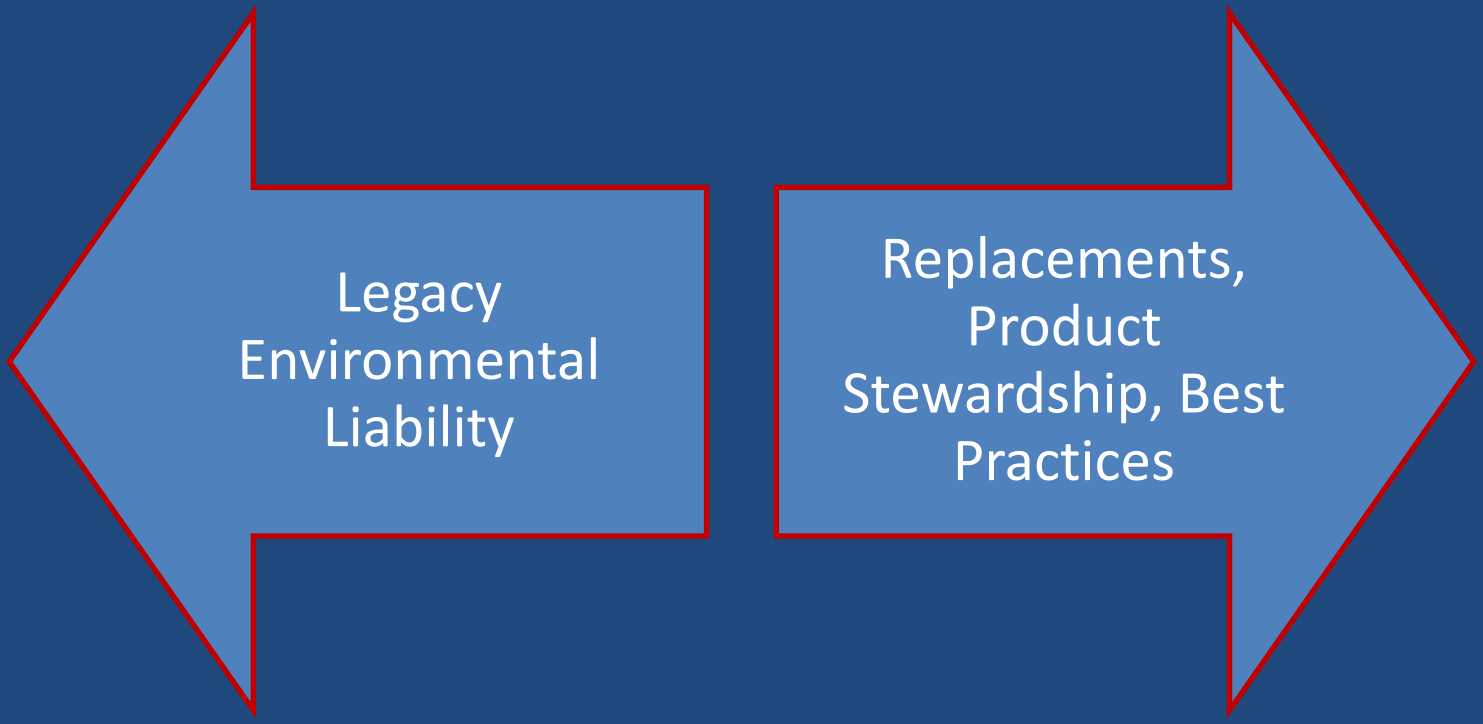
PFOS: Long History of NASF Involvement

Per- and Polyfluoroalkyl Substances

PFAS – REGULATORY LANDSCAPE



Key Industry Concerns for Mist Suppressants



PRIMARY CONCERN - PFOS

EMERGING ALTERNATIVES

NASF Talking Points

Issue Summary:

PFAS and the Surface Finishing Industry

Spring 2019

The National Association for Surface Finishing (NASF) represents the interests of businesses, technologists and professionals in the surface coatings industry. NASF and its member companies have a long history of environmental stewardship. We are the only industry in the U.S. to have requested a ban from the U.S. Environmental Protection Agency on the use of PFOS nearly ten years ago.

Due to the association's efforts, the EPA banned the use of PFOS from use in the industry in 2012. NASF and its members have continued to work proactively with the US EPA, the Michigan Department of Environmental Quality (MDEQ), and other stakeholders in Michigan, at the national level and globally to find effective solutions to reduce and eliminate perfluorooctane sulfonate (PFOS) in wastewater discharges.

A History of Proactive Environmental Stewardship around PFOS

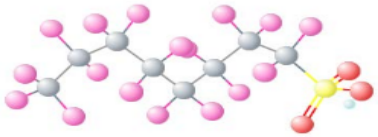
- Beginning in 1995, the U.S. Environmental Protection Agency recommended the use of PFOS as a fume suppressant in the chromium electroplating process.
- The amounts of PFOS used represented a tiny fraction of all commercial uses. It's estimated that the use of PFOS in the surface finishing industry represented less than one half of one percent of U.S. and global PFOS use.

NASF White Paper

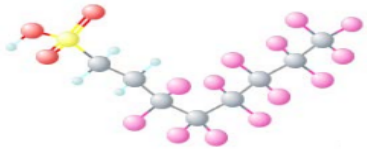
Per- and Polyfluoroalkyl Substances

PFAS – BACKGROUND INFORMATION

Perfluorooctane sulfonate (PFOS)



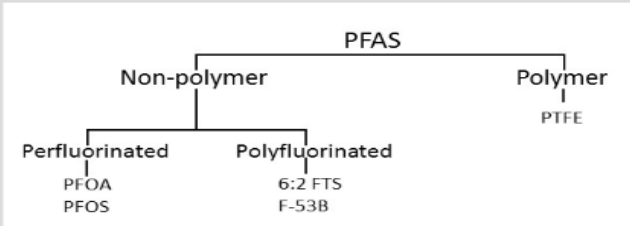
6:2 Fluorotelomer sulfonate (6:2 FTS)



Nomenclature

- ✓ "PFAS" = a large number of chemicals that have fluorines bound to carbons in a chain
- ✓ Non-polymeric PFAS are the focus of regulatory concern; polymers are large, not bioavailable and currently not a concern
- ✓ Non-polymer PFAS can either have carbons that are fully fluorinated (**per**fluorinated) or have some carbons also bound to hydrogen (**poly**fluorinated)
- ✓ PFOS and perfluorooctanoic acid (PFOA) are examples of perfluorinated compounds
- ✓ 6:2 FTS is an example of a polyfluorinated compound
- ✓ "Long-chain" PFAS generally have 6 or more fully fluorinated carbons
- ✓ "Short-chain" PFAS generally have 5 or less fully fluorinated carbons

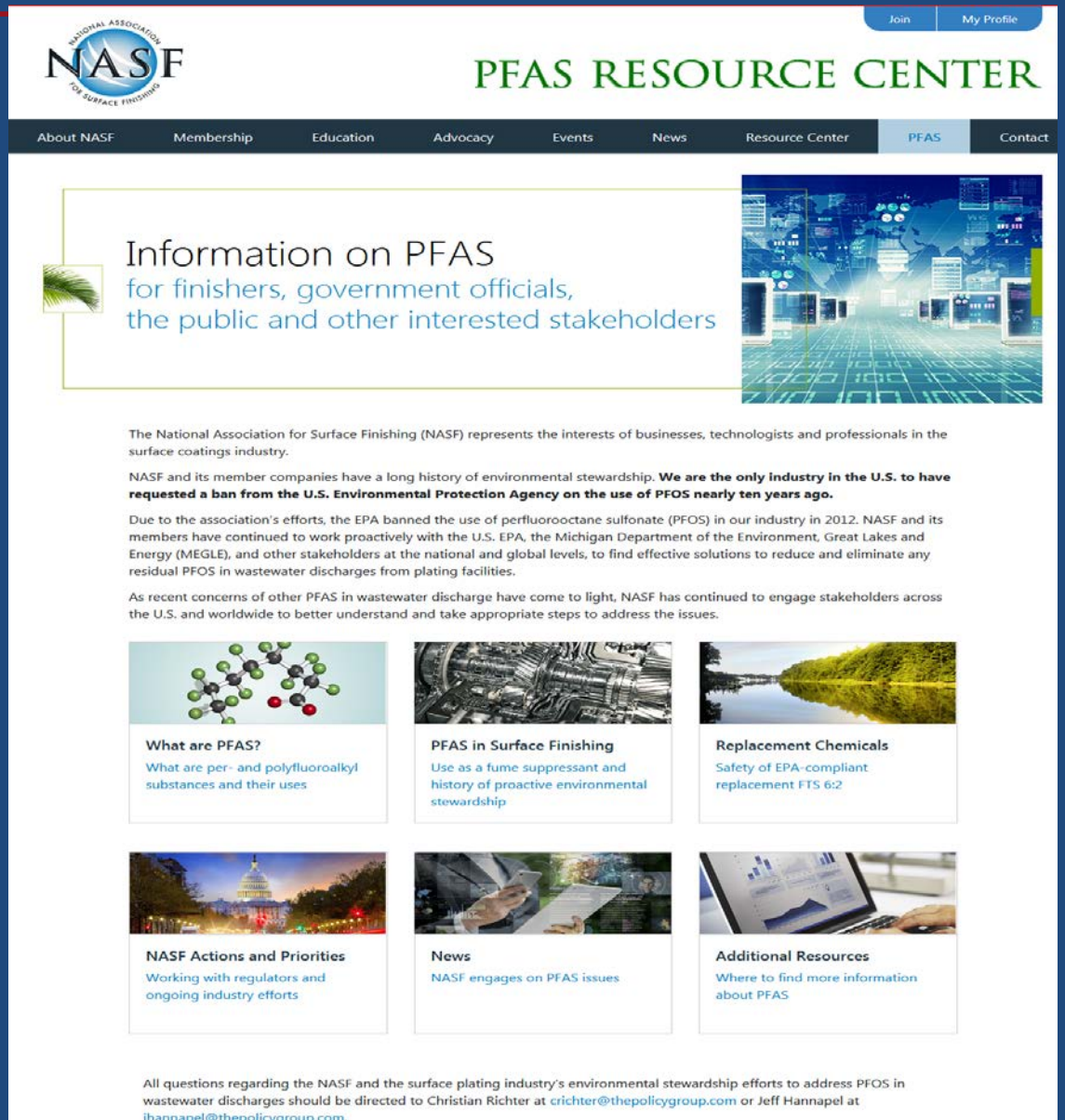
Family Tree



PFAS Relevant to Metal Plating

- ✓ PFOS was phased out of chrome mist suppressant formulations between 2012-15
- ✓ Today mist suppressant formulations in the U.S. contain polyflourinated fluorotelomers, such as 6:2 FTS
- ✓ Some PFAS polymers may be used in electroless nickel plating (e.g. PTFE)

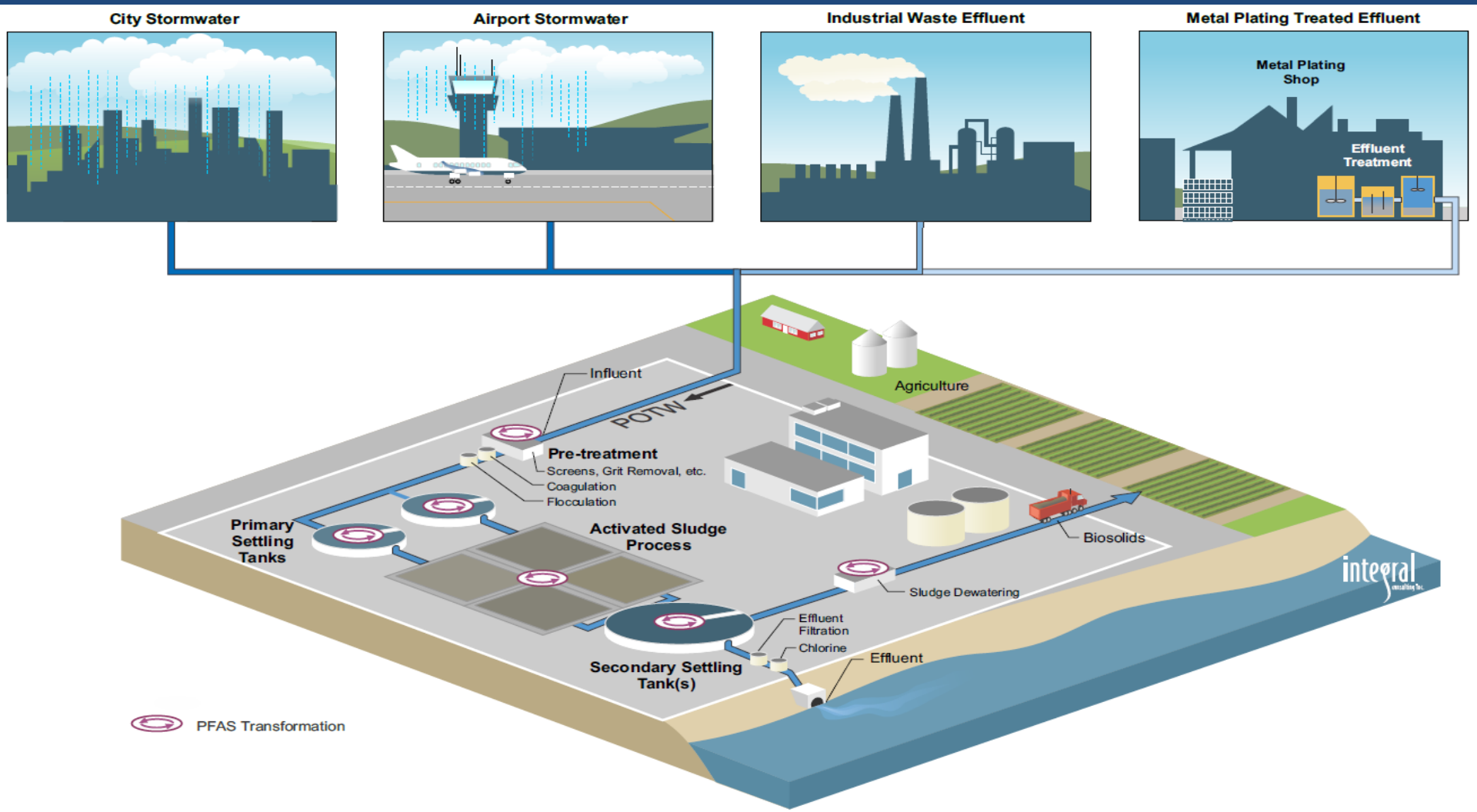
NASF PFAS Resource Center
https://nasf.org/pfas/



NASF Projects to Address PFAS Issues

- Why is there still residual PFOS in chrome plating shop effluent today?
- What is the current PFAS formulation used in chrome mist suppressants and what data supports its continued use?
- What contribution do metal plating shops have to the overall load of PFAS into POTWs/WWTPs?
- What are the potential legal liabilities for the surface finishing industry?

Conceptual Site Model for PFAS Fate & Transformation Through a POTW



Halogenated Solvents Outreach – EPA Region 5

- NASF partnering with EPA Region 5 to reduce the use of halogenated solvents and emissions from these solvents
- Surface finishing industry has made significant progress in reducing use and emissions
- Still used where substitutes are not feasible
- Improved control technologies
- Education outreach
- NASF planning webinar with EPA Region 5

RCRA Definition of Solid Waste

DC Circuit Decision

- Vacates "Verified Recycler" Exclusion from 2015 Rule
- Reinstates "Transfer-Based" Exclusion from 2008 Rule
- Vacates "Toxics Along for the Ride" Legitimacy Factor
- Secondary Materials Sent Off Site for Legitimate Recycling Are Not Discarded, So Not Subject to Waste Regulations
- Waste Water Treatment Sludge (F006) Sent Off Site for Recycling Not Discarded, Not a Waste

May 30, 2018 EPA Issued Final Rule (w/o Notice and Comment) to Implement Court Order – Effective Immediately

Need to Approach States on Implementation of EPA Rule

E-Manifest Outreach – EPA Region 5

- On February 7, 2014, EPA issued a final regulation that authorizes the use of electronic hazardous waste manifest
- The electronic manifest system was operational on June 30, 2018
- EPA outreach to provide roadmap to register and use E-manifest system
- EPA acknowledges that it will take time for industry to fully transition to E-manifests
- Fees will only be assessed against the facilities receiving hazardous waste (but they pass on costs to generators)
- EPA sets the following user fees:
  - Mailed in paper manifest -- $15 per manifest
  - Scanned in paper image -- $10 per manifest
  - Data and image upload -- $6.50 per manifest
  - Electronic Manifest (Fully Electronic & Hybrid) -- $5.00 per manifest

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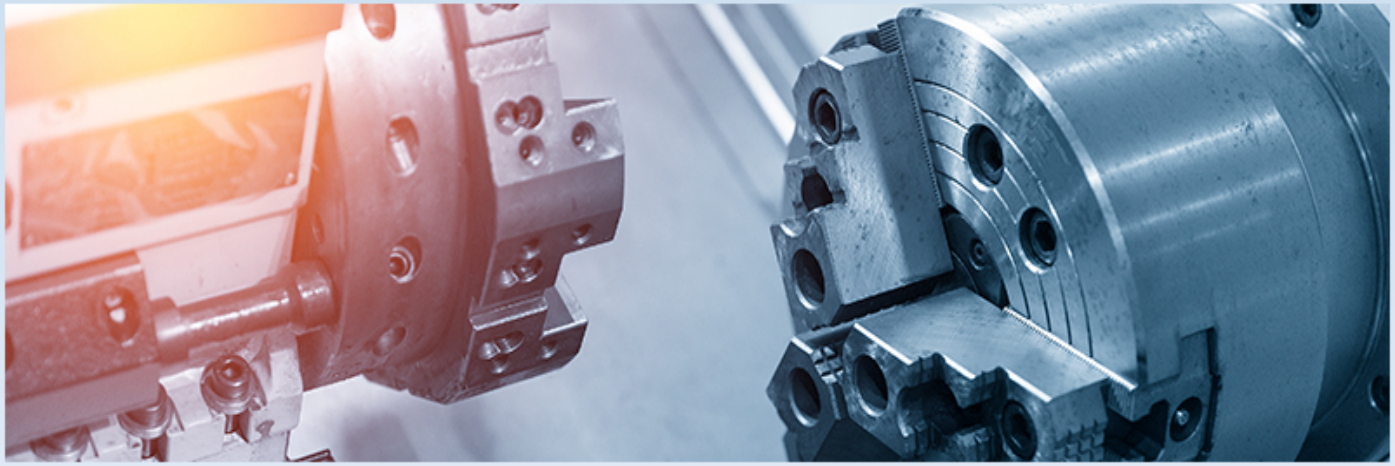

WELCOME TO THE NEW SURFACE TECHNOLOGY ENVIRONMENTAL RESOURCE CENTER

The Surface Technology Environmental Resource Center (STERC), previously known as the National Metal Finishing Resource Center (NMFRC), provides a wealth of useful environmental compliance information to the surface finishing and surface treatment industry. STERC is the result of a new partnership with NCMS, the AESF Foundation and NASF initiated in 2016 and through continued grant funding from EPA.

From Old to New - The new name reflects a broader industry technical focus for the Center. Like the old NMFRC site, STERC will continue to include easy-to-follow regulatory overviews, tips on how to comply, best practice solutions that can help the environment while saving companies money, and links to other useful resources.

A Fresh Look and Expanded Features - But now STERC offers even more. A fresh new look with expanded menu options, an expanded library (with free access to NASF members), an expanded "Ask the Experts" section, combined training and education products from NCMS and the AESF Foundation, highlights of pending new rules and compliance deadlines, and links to upcoming NASF/AESF events among other planned features.

QUESTIONS

For More Information, Contact:

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