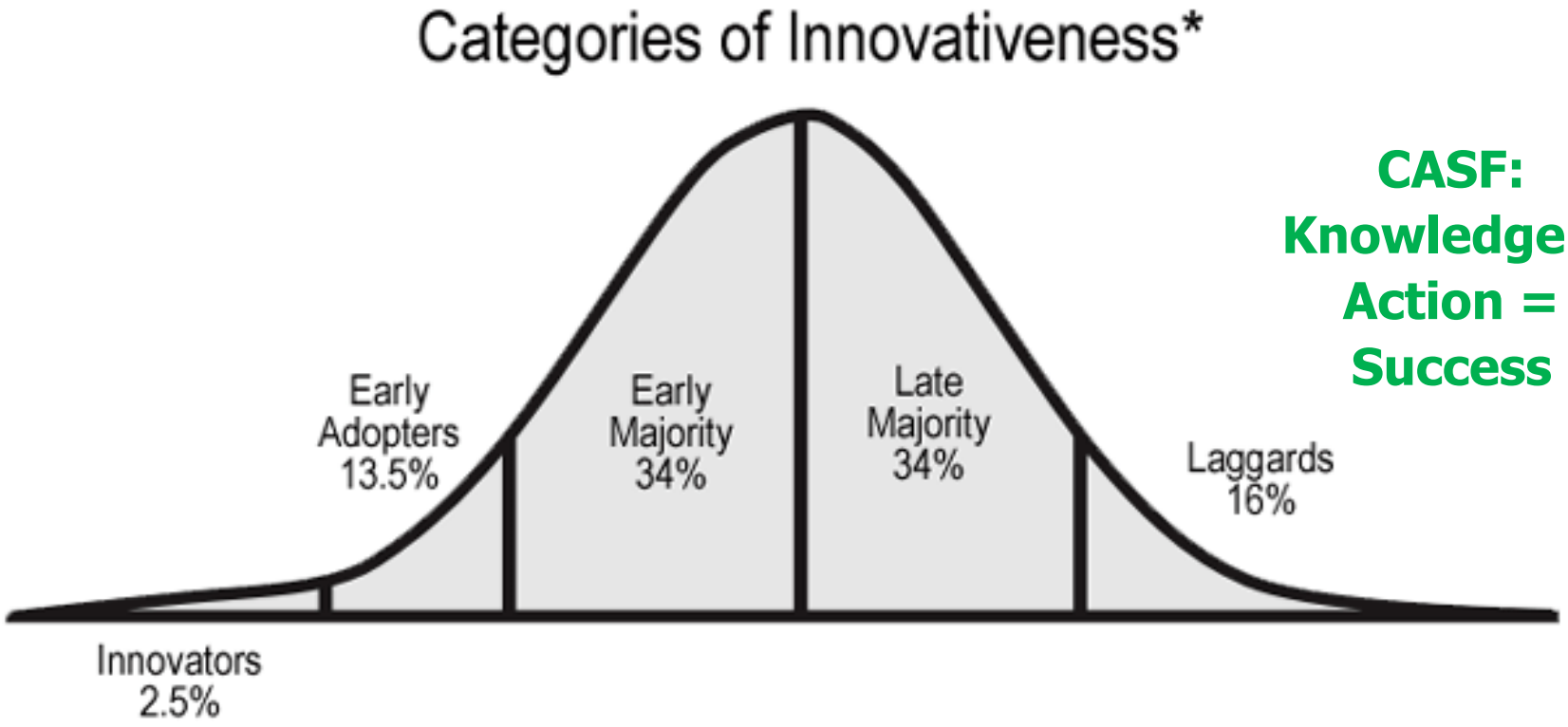



NATIONAL ASSOCIATION
NASF
FOR SURFACE FINISHING




Regulation & the Business Equation: "If you're standing still, you're already behind!"

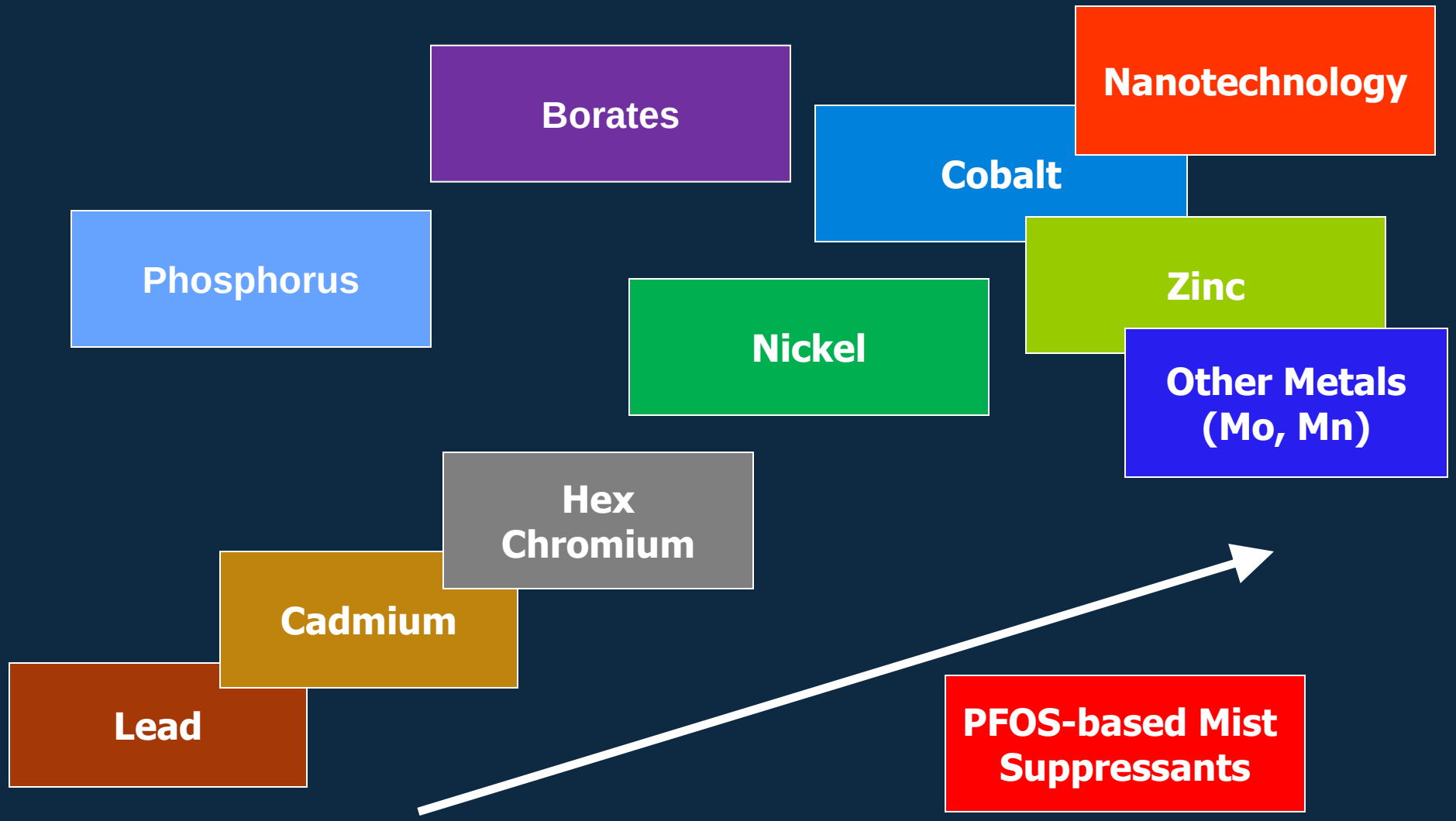


CASF: Knowledge + Action = Success

*From E.M. Rogers, *Diffusion of Innovations*, 4th edition (New York: The Free Press, 1995)

Global Trends: Continued Expansion

Regulation & Technology Change – 1970s to Present



Regulatory Focus: Old Model Shifting Over Time Entire Product Life Cycle – "New Regulators"

Processes

Congress & EPA

Products

EU & States

Inputs

EU & States

Accelerating Trend: Corporate Procurement Policies Responding to NGOs & Emerging Chemicals Lists

Trends: A Closer Look

Metals and Chemicals in the Supply Chain – Past, Present & Future

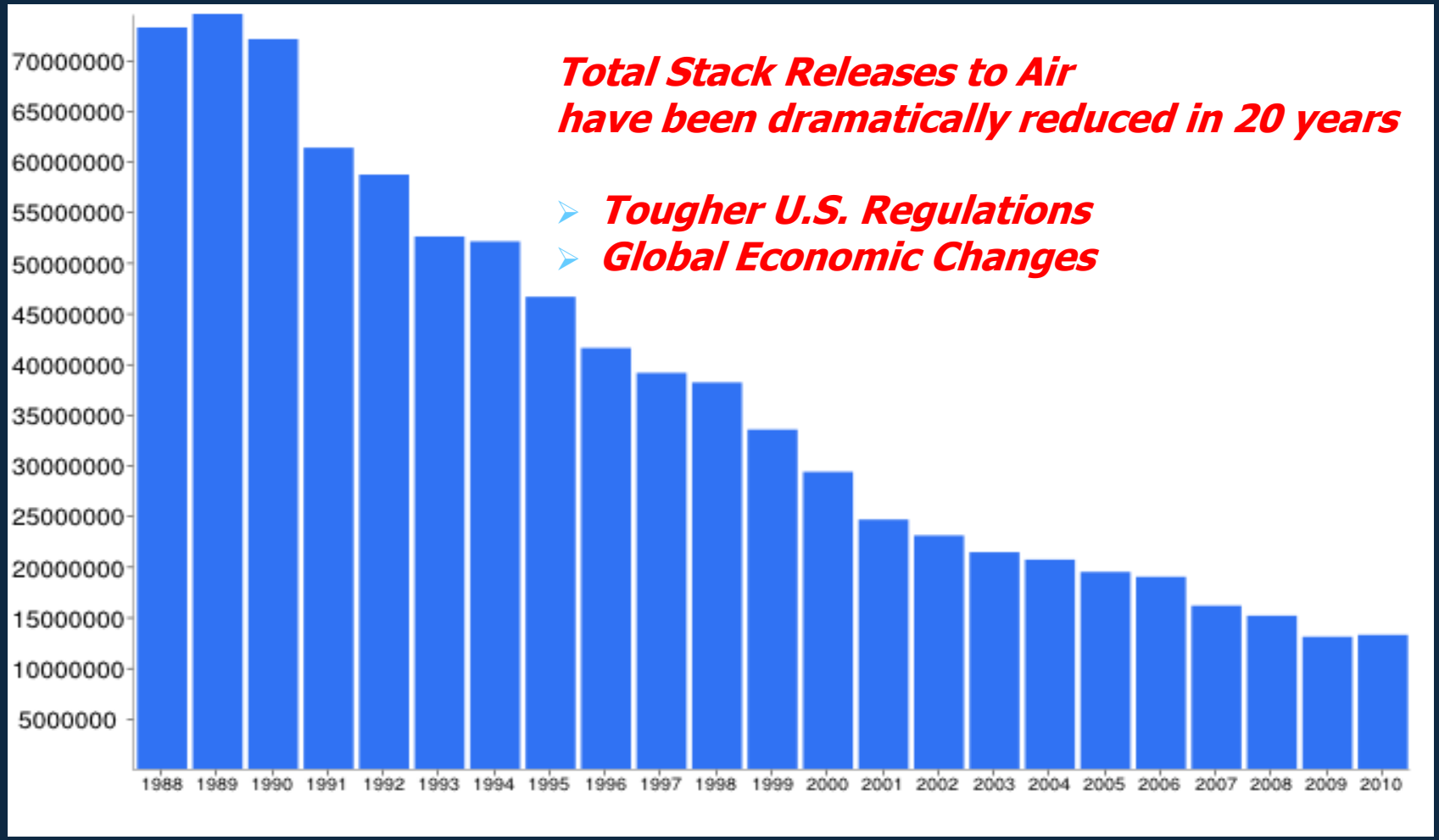
Suppliers	*Finishing Operations*	*Industrial Customers/OEMs*
Managing Inputs	**Managing Processes**	**Managing Products**
Chemical Use Controls	***Regulatory Controls***	***Materials / Product Controls***
▪ **EU REACH, Nickel CLP**	▪ **Air – Stack Controls**	▪ **ELV Directive**
▪ **TSCA**	▪ **Water – Effluent Controls**	▪ **RoHS / WEE Directives**
▪ ***US EPA Chemicals Lists***	▪ **Waste – RCRA**	▪ **EU Nickel CLP**
▪ ***US States – New Lists***	▪ **OSHA – Worker Safety**	▪ ***California Green Chemistry Initiative***
▪ ***US HHS NTP Report on Carcinogens***	▪ **Facility Security – DHS**	***Corporate/Consumer Driven Approaches***
▪ **Conflict Minerals: US/EU**		▪ **Materials De-Selection**
▪ **DEA Hypophosphite**		
EVOLVING	***MATURE***	***EVOLVING***

➢ ***Complexity of the Landscape is not Decreasing, but Increasing!***

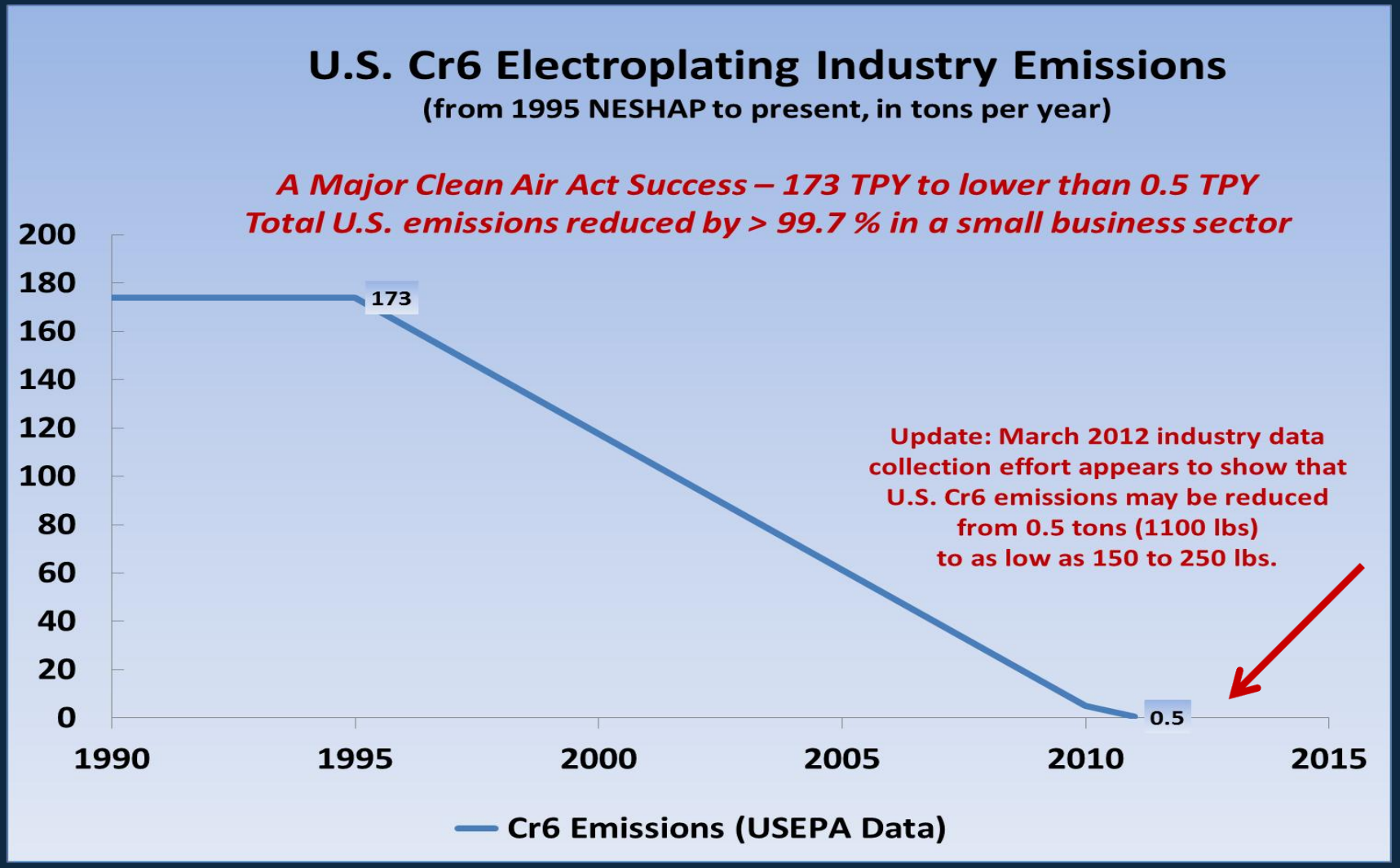
Regulatory Policy: NASF "Priority" Action Items

Selected Issues on the Agenda for 2013-2014

Environmental Impacts Decreasing: U.S. Fabricated Metals Sector, 1988 – 2010 (pounds/year)



Chromium Plating / Anodizing Air Emissions Reduced by 99.7 Percent, 1995 – 2012 (tons per year)



New Look at U.S. Wastewater Limits on Finishing: National Standards in 1984 / 2001 … 2014?

Pollutant	Electroplating Point Source Category "OLD" (40 CFR 413)		Metal Finishing Point Source Category "NEW" (40 CFR 433)	
Limits are in mg / liter	Daily	4-day Average	Daily	Monthly Average
Cadmium	1.20	0.70	0.69	0.26
Chromium	7.00	4.00	2.77	1.71
Copper	4.50	2.70	3.38	2.07
Cyanide (T)	1.90	1.00	1.20	0.65
Cyanide (A)			0.86	0.32
Lead	0.60	0.40	0.69	0.43
Nickel	4.10	2.60	3.98	2.38
Silver	1.20	0.70	0.43	0.24
Zinc	4.20	2.60	2.61	1.48
TTO*	2.13		2.13	
Total Metals	10.50	6.80		

Hex Chromium: Drinking Water Risks Now Under a Bigger Spotlight – EPA & California

EPA RECEIVES STATE-OF-THE-ART NEW RESEARCH ON HEXAVALENT CHROMIUM (Cr6)

NEW STUDIES PROVIDE CRITICAL INSIGHTS INTO Cr6 IN DRINKING WATER

For chemistry with a somewhat difficult name to remember and pronounce, hexavalent chromium (Cr6) is the subject of years of research and regulatory scrutiny. It's been the focus of news stories and even a major movie. New science is now answering many unanswered questions about the biology and chemistry, filling in missing data in the draft Integrated Risk Information System (IRIS) chemical assessment.

For the first time, researchers report there is no observed toxicity at low levels of Cr6 in drinking water. In fact, the research findings showed that low levels of Cr6 found in drinking water are detoxified (reduced) information, as it supports the current total chromium drinking water standard of 100 ppb as protective of public health.

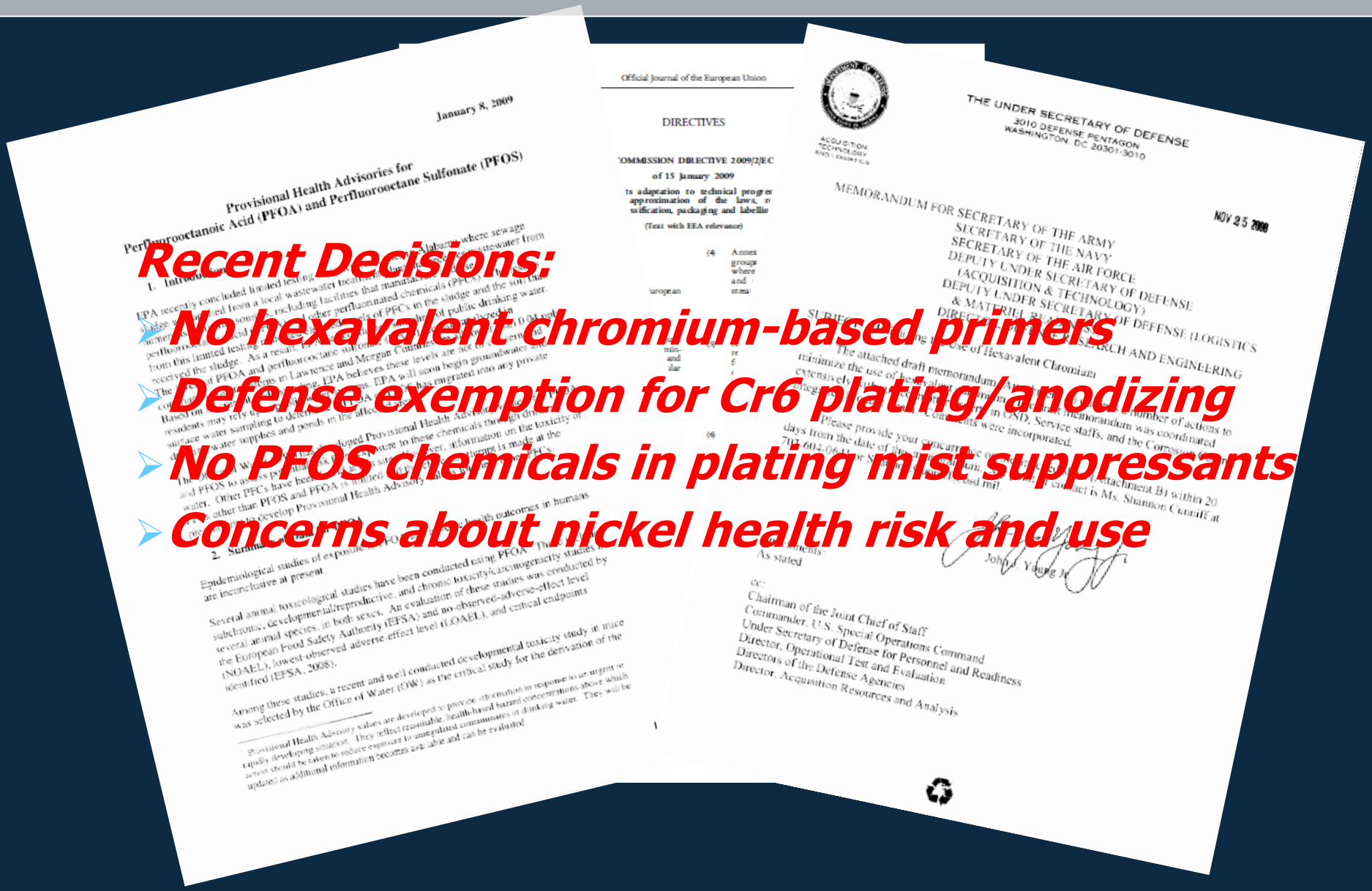
These findings lead researchers to conclude that effects of high levels of Cr6 in drinking water in the rodents used in the animal experiments conducted by the National Toxicology Program (NTP) are not comparable to what happens at the significantly lower Cr6 levels in U.S. drinking water. The researchers (see sidebar on next page) observed that when the natural capacity of the stomach fluids in the NTP test animals was overwhelmed by high Cr6 concentrations, the excess

Chromium: A Recent U.S. History for Coatings

Recent Action on Hexavalent Chromium – A Challenge for Industry

- ***Worker Exposure Standards – U.S. Labor Department*** **2004**
  - New worker exposure limit – 5.0 micrograms per cubic meter
- ***Air Emission Standards – General Plating & Polishing*** **2008**
  - Chromates, nickel & other processes – no new standards
- ***Military Uses of Chromium*** **2009 – 2013**
  - Restrictions on use of hex chrome – exemption for plating processes
- ***Air Emission Standards for Hexavalent Chromium*** **2010 – litigation**
  - The new rule tightens the old standard by 50 percent ++
- ***Cr6 Risk Assessment / Drinking Water Standards*** **2011 – present**
  - U.S. EPA revising its current human health risk assessment
  - California Drinking Water Standard – under review with decision pending

New Mandates for Chemicals and Metals: U.S. EPA and U.S. Department of Defense



- ***Recent Decisions:***
- ***No hexavalent chromium-based primers***
- ***Defense exemption for Cr6 plating/anodizing***
- ***No PFOS chemicals in plating mist suppressants***
- ***Concerns about nickel health risk and use***

Nickel: Recent & New Developments

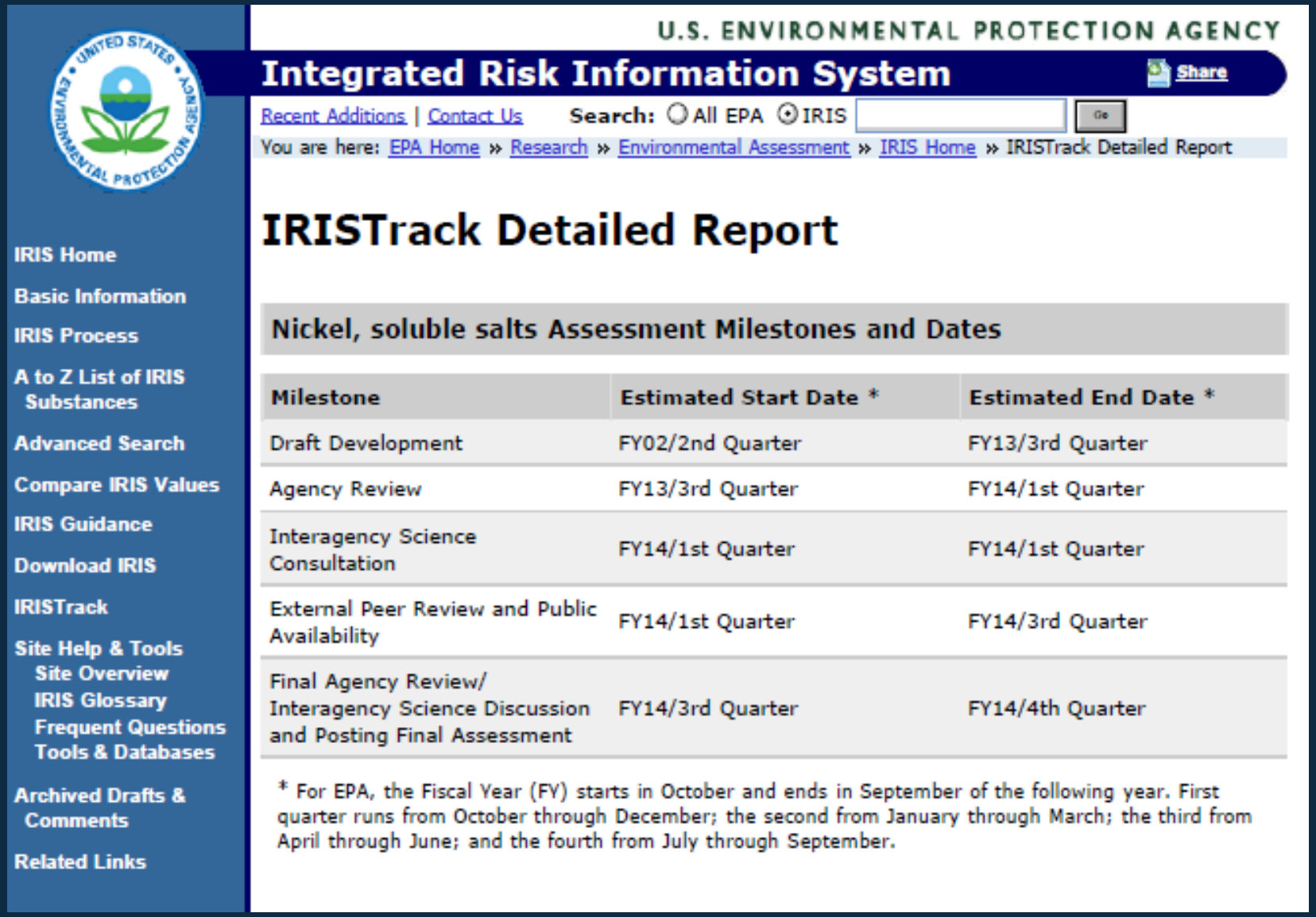
Emerging U.S. Developments driven by European Action

- ***European Union: REACH Chemicals Framework***
  - EU listed 138 nickel compounds as hazardous (cancer & non-cancer risk)
  - EU REACH: France was nominating for Candidate List – **AVOIDED, BUT...**
  - ***The SIN List – Nickel compounds make up largest chemicals group***

- ***U.S. – Nickel listed as a "problem" chemical – Global Market Response***
  - U.S. states are listing metallic nickel as a chemical of concern **– TODAY**
  - ISSUE – no standard, stigmatization & de-selection of materials for OEMs

- ***New U.S. Nickel Risk Assessment – U.S. EPA Reviewing all Nickel Forms***
  - Concerns about cancer & other health effects – soluble AND metallic
  - New U.S. risk #s to drive future U.S. regulations & standards – DELAYED

Nickel: U.S. EPA Reviewing Health Risks From Nickel (Soluble and Metallic Nickel)



U.S. ENVIRONMENTAL PROTECTION AGENCY

Integrated Risk Information System

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IRISTrack Detailed Report

Nickel, soluble salts Assessment Milestones and Dates

Milestone	Estimated Start Date *	Estimated End Date *
Draft Development	FY02/2nd Quarter	FY13/3rd Quarter
Agency Review	FY13/3rd Quarter	FY14/1st Quarter
Interagency Science Consultation	FY14/1st Quarter	FY14/1st Quarter
External Peer Review and Public Availability	FY14/1st Quarter	FY14/3rd Quarter
Final Agency Review/ Interagency Science Discussion and Posting Final Assessment	FY14/3rd Quarter	FY14/4th Quarter

* For EPA, the Fiscal Year (FY) starts in October and ends in September of the following year. First quarter runs from October through December; the second from January through March; the third from April through June; and the fourth from July through September.

Nickel Stakeholders Group:
ACC & Nickel Institute – Focus on Value Chain

NASF Technical Project: Nickel Uses & Plating for EU REACH "Risk Management Options" Process

Rowan Technology Group™
Your source for materials and coatings solutions

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EVALUATION OF THE USAGE OF NICKEL SUBSTANCES IN THE EUROPEAN FINISHING MARKET

2014 will bring new review and decisions!!

Report to: France Capon

Nickel Institute

Authors: **Ralph Alexander, Keith Legg, Rowan Technology Group**

Christian Richter, The Policy Group

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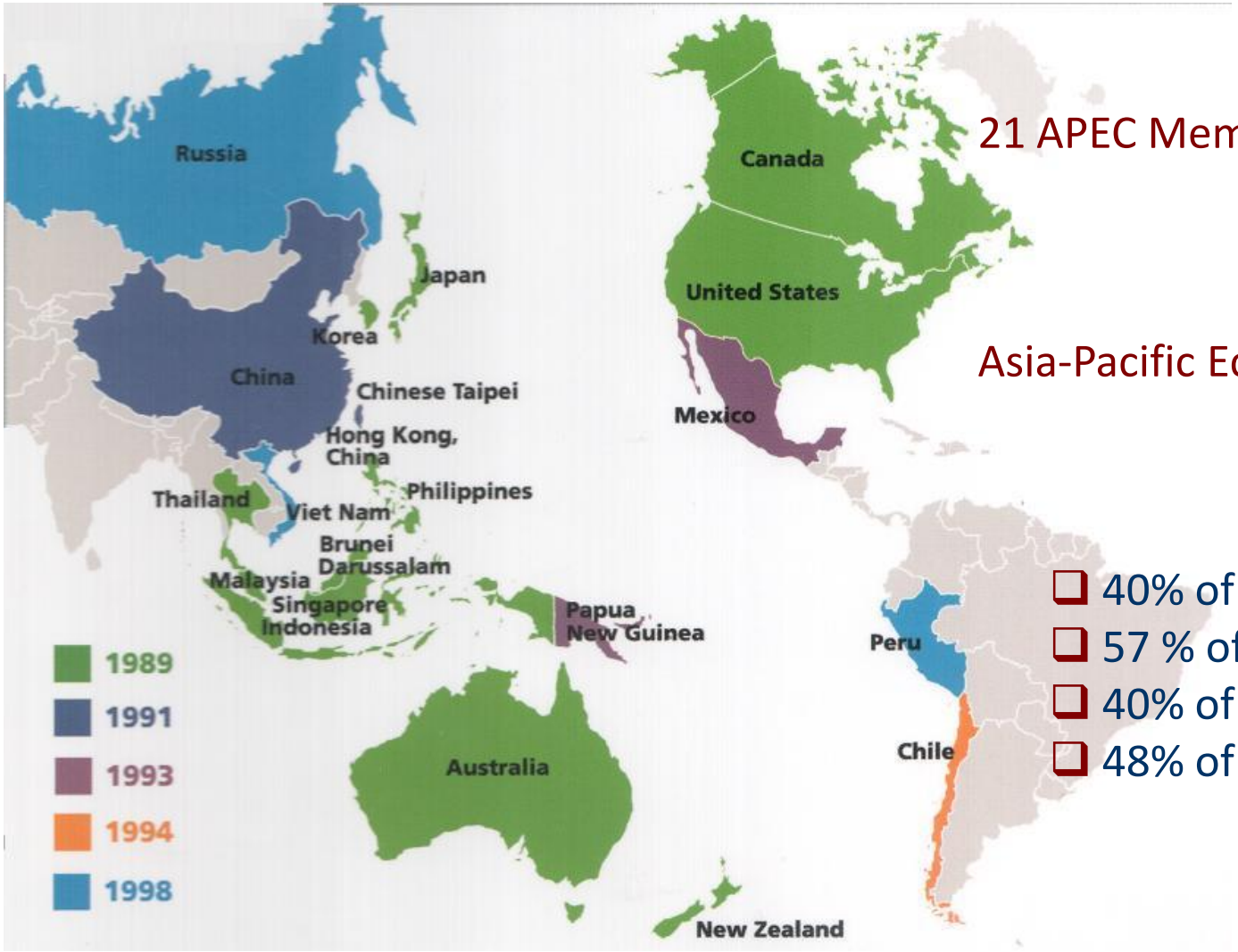
State of Maine: "Chemicals of High Concern" Law
Metallic Nickel – Top 49 "worst" – *New Action*

List of Chemicals of High Concern		Toxicity											Exposure																	
CAS	Chemical	NTP_REP	GSH cat 1A repro	EU_END1	NTP_cancer	IRIS_86A	IRIS_96	GSH cat 1 cancer	EU carcinogen 1A	IARC_1	WA_PBT	CAN_PBiT or HAS	Biomonitoring	Indoor air and dust	Danish EPA	Dutch (NL) Reports	German FEA	ESIS_RAR	HSDB_NLM	EPA Inventory Use (IUR)	HPD_NLM	ChAMP child exp	SPIN	2012 TSCA Work Plan Consumer Products	Peer Reviewed Journals	VCCEP	Released into air	Ingested by child	Applied to skin
108-88-3	Toluene		✓										8	10	19		✓	✓		✓	>400		✓			✓	✓		✓
115-96-8	Tris(2-chloroethyl) phosphate											✓		2	2	1	✓	✓		✓				✓	1		✓	✓	
117-81-7	Di-(2-ethylhexyl) phthalate, DEHP			✓									9	10	22	1	✓	✓	✓	✓	1		✓		1				
118-74-1	Hexachlorobenzene		✓	✓							✓		6																
120-47-8	Ethyl paraben			✓									2	1	6	1					75		✓		1				✓
131-55-5	2,2',4,4'-tetrahydroxybenzophenone, BP-2			✓											1						73								✓
131-56-6	2,4-Dihydroxybenzophenon			✓									1						✓		25				1				
131-70-4	Mono-n-butylphthalate			✓									4		2														
140-66-9	1,1,3,3-Tetramethyl-4-butylphenol			✓									5		1	1			uk					✓				✓	
556-67-2	Octamethylcyclotetrasiloxane			✓								✓		1	4				✓	✓	26		✓	✓	1		✓		✓
608-93-5	Benzene, pentachloro-			✓							✓	✓	2																
1163-19-5	2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether; BDE-209										✓		1	2	2			✓		✓						✓			
1634-04-4	Methyl tert-butyl ether; MTBE			✓									4	4						✓									
1763-23-1	perfluorooctanyl sulphonic acid and its salts; PFOS										✓		5	3	1										2				
1806-26-4	Phenol, 4-octyl-			✓									nd,2	1		1									1			✓	
2425-85-6	2-Naphthalenol, 1-[(4-methyl-2-nitrophenyl)azo]-											✓			1						4		✓						
5466-77-3	2-ethyl-hexyl-4-methoxycinnamate			✓											1				✓		109								✓
7439-97-6	Mercury & mercury compounds		✓								✓		3	1	3				✓		2	✓	✓	✓					
7440-02-0	Nickel & nickel compounds				✓								3	2	9		✓			✓	3			✓	1				
7440-38-2	Arsenic & Arsenic compounds		✓		✓	✓		✓		✓			6	5	4						5		✓	✓					
7440-41-7	Beryllium & Beryllium compounds				✓		✓	✓		✓			4																
7440-43-9	Cadmium				✓					✓			8	2	5	1	✓				6		✓	✓					
14808-60-7	Quartz				✓			✓		✓										✓	>400		✓	✓					✓
25013-16-5	Butylated hydroxyanisole			✓															✓		41		✓						✓

Asia-Pacific Developments: APEC & Nickel



21 APEC Member economies

Asia-Pacific Economic Cooperation

- 40% of world population
- 57 % of world GDP
- 40% of world FDI
- 48% of world trade

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APEC Study: $ Impacts of EU Nickel Decision

Asia-Pacific Economic Cooperation

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PUBLICATIONS UNDER: Mining Task Force (MTF)
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APEC Mining Task Force

Short Description

This report sets out a quantification of socio-economic impacts on selected APEC economies of a 2009 European Commission decision to classify as hazardous 138 nickel-containing chemicals (1st ATP of EU Classification, Labelling and Packaging regulation).

This report contains the results of a socio-economic assessment which quantified the likely impact of this classification decision on nickel production and demand in a number of nickel producing and consuming APEC economies. The assessment involved extensive data gathering, analysis and modelling based on identified impact scenarios.

Content Summary

Executive Summary
1. Introduction
2. Background to the Study
3. Design and Scope
4. Assessment of Impact Methodology
5. The Global Nickel Industry
6. Nickel and APEC Economies

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APEC Chemicals Dialogue, June 2013: Metals Risk Assessment Workshop Option

Inform APEC economies on addressing the unique properties of metals in Risk Assessment as new regulatory decisions emerge

NASF: The Global Surface Technology Roundtable

- ***Emerging global developments warrant collaboration***
- ***Focus on sustainability – a "level playing field"?***
- ***Collaboration on key issues – mutual interests***
- ***Information exchange and global coordination***
  - ✓ ***Objective – Maintain a viable surface coatings industry***
  - ✓ ***Recent examples – Korea REACH, California Green Chemistry***

"In a global world we are slowly moving to global standards."

– Isabel Hilton, ChinaDialogue

NASF: Addressing Emerging Regulation

- Challenge poorly informed restrictions – esp. with significant $ impact
- Support good practices and sustainable long-term alternatives
- Substitutes – informed by science & room for technology transition

"These new regulations will fundamentally change the way we get around them."

If only it were this easy...

THE SURFACE TECHNOLOGY INITIATIVE

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Advancing a Sustainable Future

How Surface Finishing Technology is Vital to Manufacturing and You

NASF Washington Forum

April 8-10,2014
Washington D.C.

Join Us in Washington DC

This year's Washington Forum promises to be one of the best yet! The event will feature nationally known commentators and top policy experts on issues affecting the future of surface technology in North America.

Participate in strategic briefing sessions, meet industry colleagues and tell Congress that the nation's fiscal future and economic security depend on an improved climate for manufacturing.

Interested in NASF?

If your company is looking for tools and resources to inform better business and technical decisions and would like more information on connecting with NASF, please contact Phil Assante at NASF Member Relations directly at (703) 887-7235 or by email at passante@thepolicygroup.com.

The Washington Forum is Presented by the National Association for Surface Finishing

SUR/FIN
Manufacturing & Technology Tradeshow & Conference

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WHERE IDEAS FINISH FIRST.

Thank you to everyone who made SUR/FIN 2013 a great success including the 170 exhibitors, 70 conference presenters, and over 1250 attendees!

SUR/FIN 2013 Photo Gallery Now on Facebook!

Exclusively for Facebook Fans: View our gallery of over 100 photos from the Awards Ceremony, Show Floor, Tuesday Reception, and more! Like NASF today!

Reserve Your Space for 2014!

SUR/FIN is heading to the birthplace of Rock and Roll for our 96th Tradeshow and Conference! Mark your calendar for three days of informative presentations and exhibitors from around the world—all without having to camp out for a ticket!

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NASF MANAGEMENT CONFERENCE

February 23-27, 2014
Maui, Hawaii

Thank You for a Successful Conference!

The 2013 NASF Management Conference in Key West was a success, with over 80 industry executives, owners and managers in attendance from the surface finishing industry. Attendees enjoyed a variety of sessions, with topics ranging from the economic outlook for finishing and manufacturing, current and future business perspectives, and an overview of the latest trends in technology and materials.

A Word from Our 2014 Conference Chair

Thanks again to Blair Vandivier for an exciting and informative Management Conference in 2013!

For 2014 I would like to invite you to join NASF at the Sheraton Maui on Kaanapali Beach for another round of valuable presentations, networking opportunities, and exhilarating experiences with executives from some of surface finishing's most successful and influential companies.

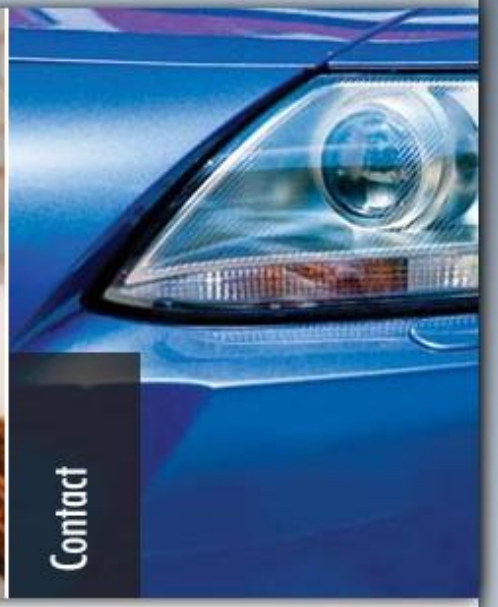
We are planning a lineup of dynamic speakers presenting on topics ranging from surface finishing regulation to business management. In addition, you and your guests will have ample opportunity to experience the best that Hawaii has to offer from one of its premier resorts.

Check back often for updates or join us on Facebook for regular posts on the Management Conference and other NASF events. We hope to see you there!

Mike Kelly
ASKO Processing, Inc.


2014 NASF Management Conference Keynote
Robert O'Neill
Building Extraordinary Performance
Within Business

THE BRIGHT DESIGN CHALLENGE



What is The Bright Design Challenge?

Surface finishing is everywhere you look in the millions of products we use every day. From the car you drive, to the cell phone that drives your life, most everything is "finished" with some form of coatings technology. Surface technology adds value to products by making them last longer, look better or perform in ways that would otherwise be impossible.

The National Association for Surface Finishing (NASF) believes that the future of surface finishing depends on the innovative ideas of our youth. We consider it the responsibility of those currently serving the industry to foster and nourish these ideas. As part of this mission, and to spotlight the impact we have on millions of products and households, the National Association for Surface Finishing each year proudly presents The Bright Design Challenge. This ground-breaking creative program is

Auto Show Interview with Mark West of the College for Creative Studies

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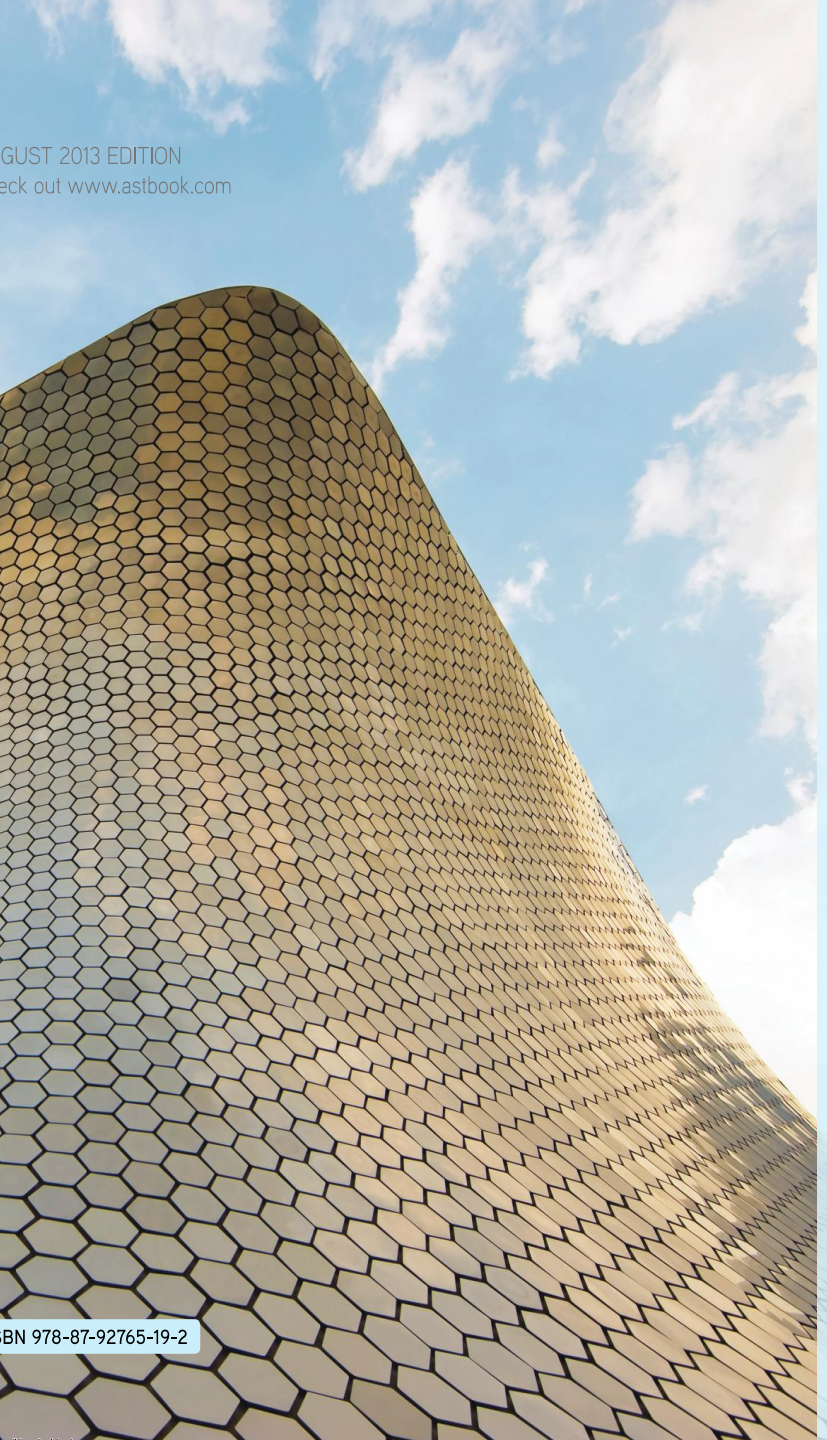

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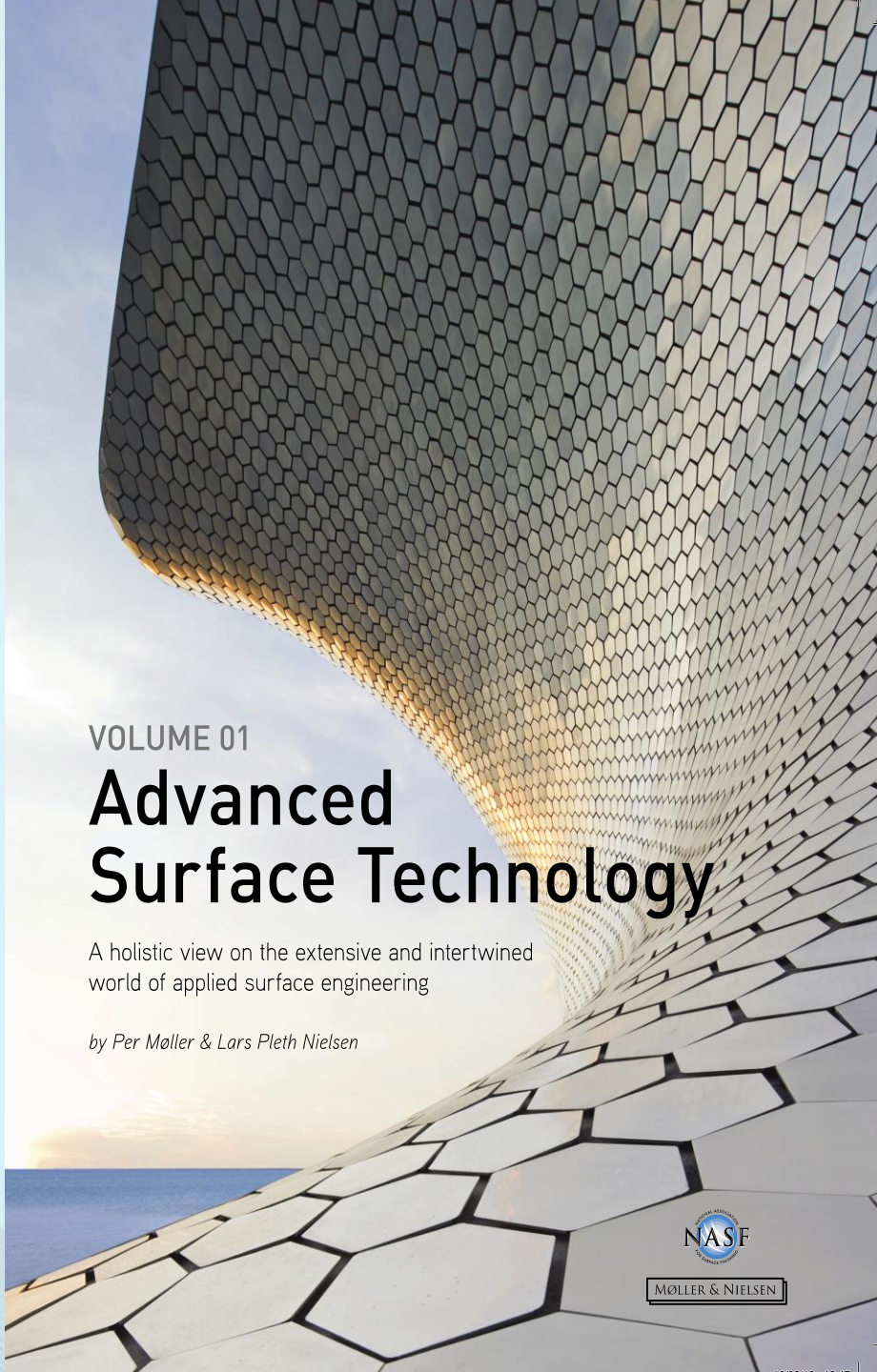


VOLUME 01

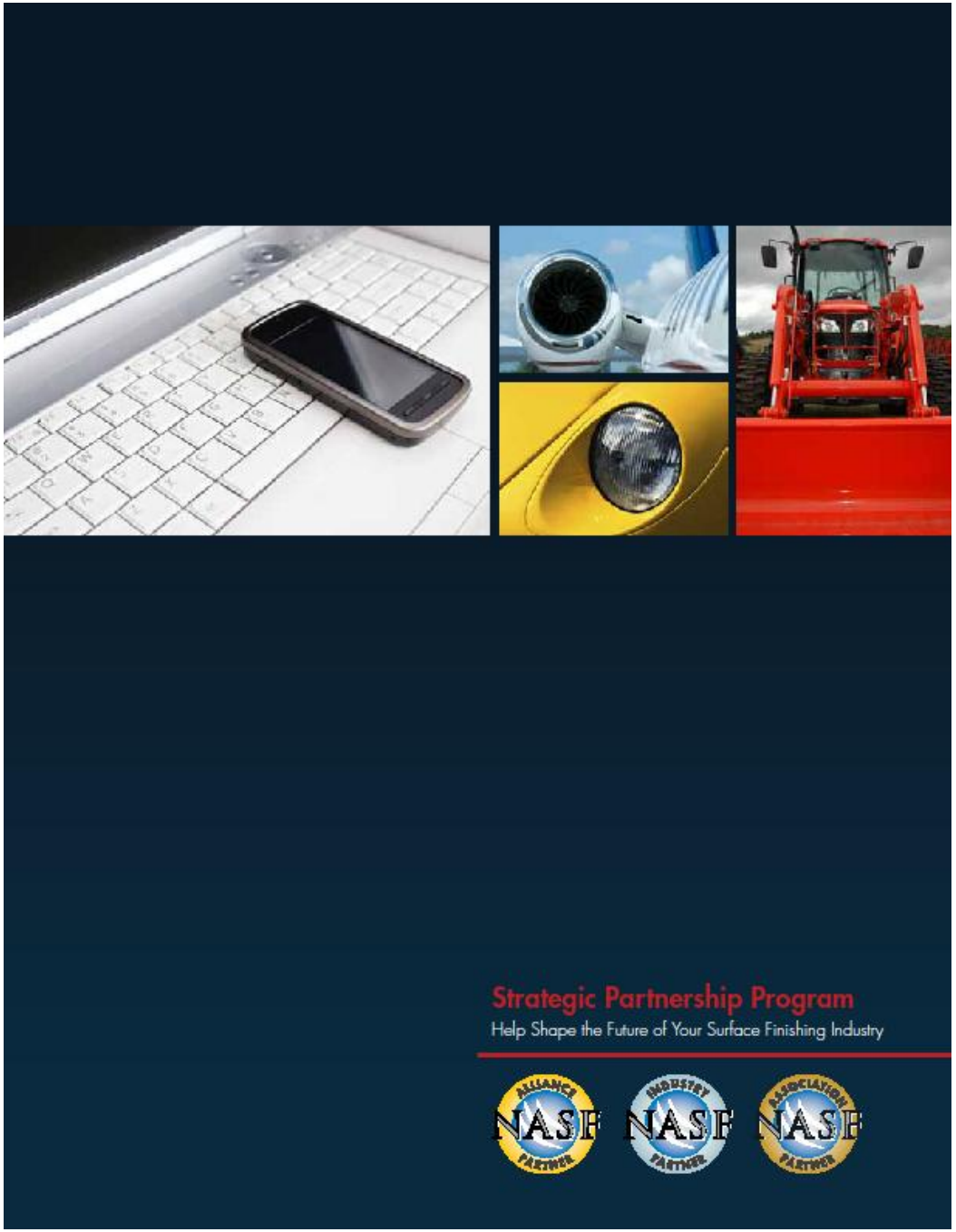
Advanced Surface Technology

A holistic view on the extensive and intertwined world of applied surface engineering

by Per Møller & Lars Pleth Nielsen

NASF

MØLLER & NIELSEN



The Power of Collaboration:

NASF Strategic Partnerships

NATIONAL ASSOCIATION FOR SURFACE FINISHING
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Industry Participation & Collaboration are Key!

"If you don't have a seat at the table, then you're what's being served on the menu."

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