Legislative Committee

Chair: Bob Redding
ASA

Vice Chair: George Gilbert
Ford Customer Service

CIC: Review of OSHA Hexavalent Chromium Standard

August 2, 2006

George Patterson, DuPont Performance Coatings

What is hexavalent chromium?

Toxic form of Chromium metal that is generally man-made

Used in may industrial applications, primarily for its anti-corrosive properties

Created during certain “hot” work processes where the original form of chromium was not hexavalent

Hexavalent chromium: major health effects

Lung cancer

Nasal septum ulcerations and perforations

Asthma

Skin ulcers

Allergic and irritant contact dermatitis

How can occupational exposure to hexavalent chromium occur?

Inhalation of mists dusts or fumes

Eye or skin contact

Sources of Hexavalent Chromium in the Collision industry

Topcoats

- Lead chromate pigments (Yellows)
- Lead chromate, molybdate & sulfate pigments (oranges-reds)
- Low cost, excellent hiding

Undercoats

- Zinc chromates, strontium chromates, etc.
- Corrosion protection, adhesion, humidity resistance

Chrome-free alternates available

- MSDS will show whether or not a coating contains hexavalent chromium

Background on OSHA standard

Prior exposure limit = 52ug/m3

Lawsuit: Public Citizen wanted 0.25ug/m3

- OSHA ordered by court to promulgate rule

Proposed rule was 1ug/m3

Final rule = 5ug/m3 effective 5/30/06

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=18599

Major provisions of the standard

- Scope
- Permissible exposure limit (PEL)
- Exposure determination
- Regulated areas
- Methods of compliance
- Respiratory protection
- Protective work clothing and equipment
- Hygiene areas and practices
- Housekeeping
- Medical surveillance
- Communication of Hazards
- Recordkeeping
- Dates

Permissible exposure limit (PEL) and Action Level (AL)

PEL: **5 ug / m3** **- TWA**

AL **2.5 ug / m3** **- TWA**

Exempt from the standard if

- Where employers have objective data demonstrating that exposure cannot be above 0.5 ug / m3 under any condition of use

Exposure determination

Two options

- Scheduled monitoring
- Performance-oriented option

Scheduled monitoring option

Prescribes a schedule for performing initial and periodic personal monitoring

If initial monitoring indicates exposures are:

- Below the AL: monitoring can be discontinued
- At or above the AL: monitor every 6 month
- Above the PEL: monitor every 3 months

Performance-oriented option

Exposure characterized using any combination of air monitoring data, historical monitoring data or objective data

No fixed schedule for performing periodic monitoring

Is there any objective historical data?

Table 3-45. IMIS Full-Shift Personal Exposure (8-hour TWA) data for Hexavalent Chromium in Automotive Refinishing Industry for Automotive Spray Painters

S. No.	Job Category	Job Description	Facility	Sample Date	SIC	Exp ($\mu g/m^3$)	LOQ Exp ($\mu g/m^3$)[a]
1	Automotive Spray Painter	PAINTER	A	4/1/1984	7532	1.04	1.04
2	Automotive Spray Painter	PAINTER	A	4/1/1984	7532	ND	0.36
3	Automotive Spray Painter	AUTO SHOP PAINTER	D	11/1/1991	7532	5.20	5.20
4	Automotive Spray Painter	PAINTER	E	11/1/1982	7532	14.56	14.56
5	Automotive Spray Painter	PAINTER	G	11/1/1990	5511	ND	0.36
6	Automotive Spray Painter	SPRAY PAINTER	H	1/1/1989	5511	ND	0.36
7	Automotive Spray Painter	SPRAY PAINTER	J	4/1/1990	7532	20.80	20.80
8	Automotive Spray Painter	PAINTER	K	2/1/1994	7532	ND	0.02
9	Automotive Spray Painter	PAINTER	L	1/1/1993	7532	ND	0.36
10	Automotive Spray Painter	PAINTER	N	8/1/1989	7532	4.68	4.68
11	Automotive Spray Painter	PAINTER	O	2/1/1992	7532	ND	0.36
12	Automotive Spray Painter	SPRAYER	Q	1/1/1992	7532	5.20	5.20
13	Automotive Spray Painter	PAINTER	Q	1/1/1992	7532	10.40	10.40
14	Automotive Spray Painter	PAINTER	R	7/1/1985	7532	ND	0.36
15	Automotive Spray Painter	PAINTER	S	10/1/1985	5511	ND	0.36
16	Automotive Spray Painter	SPRAY PAINTER	T	4/1/1992	5511	ND	0.36
17	Automotive Spray Painter	PAINTER	X	6/1/1997	5511	15.60	15.60
18	Automotive Spray Painter	PAINTER	Y	5/1/1991	5511	ND	0.36
19	Automotive Spray Painter	PAINTER	AA	4/1/1991	7532	ND	0.36
20	Automotive Spray Painter	PAINTER	DD	10/1/1983	7532	3.64	3.64
21	Automotive Spray Painter	SPRAY PAINTER	EE	4/1/1995	7532	11.96	11.96
22	Automotive Spray Painter	PAINTER	FF	10/1/1983	7532	ND	0.36
23	Automotive Spray Painter	SPRAY PAINTER	GG	3/1/1987	7532	ND	0.36
24	Automotive Spray Painter	PAINTER	HH	6/1/1993	7532	ND	0.36
25	Automotive Spray Painter	PAINTER	II	3/1/1993	7532	ND	0.36
26	Automotive Spray Painter	PAINTER	JJ	5/1/1993	5511	624.00	624.00
27	Automotive Spray Painter	PAINT SPRAYER	KK	4/1/1986	7532	5.20	5.20
28	Automotive Spray Painter	PAINTER	LL	7/1/1982	7532	7.80	7.80
29	Automotive Spray Painter	PAINTER	MM	1/1/1999	7532	10.40	10.40
30	Automotive Spray Painter	PAINT SPRAYER	KK	4/1/1986	7532	15.60	15.60

[a] LOQ adjustment - Samples taken prior to September 1993 were analyzed using OSHA method 103 which would correspond to a non-detect (ND) value of 0.36 $\mu g/m^3$ (for an 8-hour sample). Similarly, all samples taken after were analyzed using OSHA method 215 with a corresponding ND value of 0.021 $\mu g/m^3$.

Table 3-46. IMIS Full-Shift Personal Exposure (8-hour TWA) data for Hexavalent Chromium in Automotive Refinishing Industry for Automotive Body Technicians

S. No.	Job Category	Job Description	Facility	Sample Date	SIC	Exp ($\mu g/m^3$)	LOQ Exp ($\mu g/m^3$)[a]
1	Automotive Body Tech	BODYMAN	B	1/1/1995	7532	ND	0.02
2	Automotive Body Tech	PAINTER HELPER	C	1/1/1995	5511	ND	0.02
3	Automotive Body Tech	BODY WORKER	F	11/1/1982	7532	1.04	1.04
4	Automotive Body Tech	BODYMAN	I	1/1/1983	7532	ND	0.36
5	Automotive Body Tech	Automotive Body Tech SANDER	I	1/1/1983	7532	ND	0.36
6	Automotive Body Tech	PRESIDENT	M	4/1/1994	7532	ND	0.02
7	Automotive Body Tech	PAINT & BODY	P	4/1/1994	7532	7.28	7.28
8	Automotive Body Tech	BODY MAN	U	12/1/1979	5511	10.40	10.40
9	Automotive Body Tech	FOREMAN OF PAINT SHO	V	9/1/1980	7532	5.20	5.20
10	Automotive Body Tech	LABORER	W	4/1/1987	7532	16.64	16.64
11	Automotive Body Tech	MGE	W	4/1/1987	7532	ND	0.36
12	Automotive Body Tech	N/A	Z	3/1/1991	5511	ND	0.36
13	Automotive Body Tech	RETUMBLER	BB	12/1/1989	7532	ND	0.36
14	Automotive Body Tech	BODY TECHNICIAN	CC	10/1/1991	7532	ND	0.36
15	Automotive Body Tech	SANDER	DD	10/1/1983	7532	ND	0.36
16	Automotive Body Tech	SANDER	FF	10/1/1983	7532	ND	0.36
17	Automotive Body Tech	BODY SHOP WORKER	GG	3/1/1987	7532	ND	0.36
18	Automotive Body Tech	BODY SHOP TECHNICIAN	NN	2/1/1982	5511	4.16	4.16
19	Automotive Body Tech	BODY SHOP TECHNICIAN	NN	2/1/1982	5511	19.76	19.76

[a] LOQ adjustment - Samples taken prior to September 1993 were analyzed using OSHA method 103 which would correspond to a non-detect (ND) value of 0.36 $\mu g/m^3$ (for an 8-hour sample). Similarly, all samples taken after were analyzed using OSHA method 215 with a corresponding ND value of 0.021 $\mu g/m^3$.

Conclusions

Spray painting

- median of all shops tested = 2.52 ug / m3
  - 50% of shops at or above action level

Sanding

- Median of all shops = 0.36 ug / m3
  - But some shops > 10 ug / m3

Wide scatter in the data, so cannot generalize

- Clearly some shops will be subject to the standard
- Cannot say that you are not subject without monitoring data

Regulated areas

Areas where exposure exceed or can be reasonably expected to exceed the PEL

- Must be demarcated from other areas
- Must limit access to employees who have a need to be there

Methods of compliance: what methods must employers use to achieve the PEL?

Established engineering and work practices controls as the primary means of achieving the PEL

Exception

- Tasks or operations that do not result in exposures above the PEL for 30 or more days per year, then use of respirators alone allowed to achieve the PEL

What is appropriate engineering and work practices control?

Quote from OSHA

- “We don’t know, we’ll have to decide on a case-by-case basis”

Excellent website for insight

http://www.epa.gov/dfe/pubs/projects/auto/index.htm

Quote from standard

- The best engineering control is substitution

EPA defined best practices

•**DfE Auto Refinishing Best Practices Outreach Kit** [Web Only]
September 2003
Developed for site visits and train-the-trainer workshops, this kit serves as an excellent resource for autobody and refinish shops. The Kit contains best practices checklists for each auto refinish activity, fact sheets, case studies, health and safety information, lists of manufacturers and suppliers of equipment, and other useful information for shop owners and technicians.

•**Autobody Refinishing General Best Shop Practices: Safe Work Practices that Reduce Worker Exposure to Hazardous Chemicals** [Web Only]
EPA-744-R-98-008 * (9 pp) * September 1998
PDF version of Autobody Refinishing General Best Shop Practices (24 KB)
This document focuses on the key components of beneficial change in small auto refinish shops. Compiled from real-life shop experiences, the documents serve as worker protection and pollution prevention goals for the small shop.

•**Best Practices for the Paint Mixing Room** [Web Only]
(EPA/744-F-00-003)
June 2000, 2 pages
PDF version of Best Practices for the Paint Mixing Room (204 KB)
Para la versión de español, vea Mejores Practicas en el Cuarto de Mezclar Pintura [PDF] (187 KB)
(EPA/744-F-00-003A)
junio 2000 (revisado noviembre 2001), 2 paginas

•**Best Practices for Auto Refinishers When Spray Painting** [Web Only]
(EPA/744-F-00-002)
June 2000, 1 page

•PDF version of Best Practices for Auto Refinishers When Spray Painting (291 KB)
Para la versión de español, vea Mejores Practicas para Retocadores de Automoviles Usando Pistolas de Rocio [PDF] (182 KB)
(EPA/744-F-00-002A)
junio 2000 (revisado noviembre 2001), 1 pagina

•Etc., etc., etc…….

•Highlights: HVLP guns, downdraft spray booths, vacuum sanders

Respiratory protection

Respirators and a program per 29 CFR 1910.134 required during:

- Periods necessary to install or implement engineering and work practice controls
- Maintenance or repair operations where engineering and work practice controls are infeasible
- Operations where all feasible controls have been used and exposures are still above the PEL
- Operations where exposures do not exceed the PEL for more than 30 days / year
- Emergencies

Protective work clothing and equipment

- Use where a hazards is present or likely to be present from skin or eye contact
- Provided and paid for by employer
- Remove Cr(VI) contaminated clothing and equipment when work shift or task is completed
- Clean, store and label Cr(VI)-contaminated clothing and equipment

Housekeeping

Keep all surfaces as free as practicable of accumulation of Cr(VI)

Use HEPA vacuums or other methods that minimize exposure to Cr(VI)

Use of compressed air prohibited unless

- Used in conjunction with a ventilation system to capture the dust cloud created by the compressed air
- No alternative method is feasible

Medical Surveillance

Provisions for conducting baseline and periodic health assessment of exposed employees

Provided by or under the supervision of a physician or other licensed health care professional (LHCP)

Provided at no cost to employee and at a reasonable place and time

Which employees must be provided with medical surveillance

- Exposed at or above action level for 30 or more days / year
- Experiencing signs or symptoms of Cr(VI) exposure
- Exposed in an emergency

Communication of Hazards

Provide employee training in accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200)

Additional training on the contents of the Cr(VI) standard and the purpose and description of the medical surveillance program required by the standard

Recordkeeping

Must maintain records per 29 CFR 1910.1020 for:

- Air monitoring data
- Historical monitoring data
- Objective data
- Medical surveillance information including
  - LHCP's written opinions
  - Information provided to the LHCP

No requirement to maintain training records

When must employers comply with provisions of the standard?

Effective date: May 30, 2006

Start-up dates:

- All provisions except engineering controls
  - For employers with 19 or fewer employees: May 30, 2007
  - For employers with more than 19 employees: Nov 27, 2006
- Engineering controls
  - For all employers: May 31, 2010

Sanding

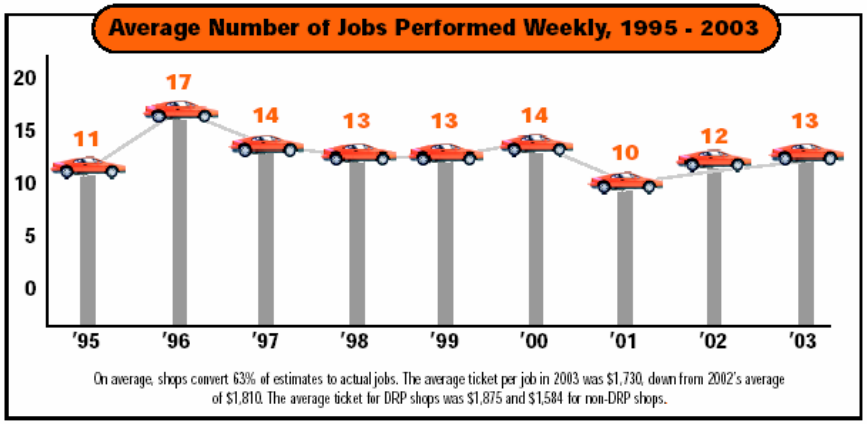
How likely is it that a car coming into the shop will have been coated with hexavalent chromium when assembled?

Table 3
Survivability of Passenger Cars by Vehicle Age
from 1977 to 2002 NVPP Registration Data

Vehicle Age	Adjusted Survival Rate	LN(1-SR)	LN(-LN(1-SR))	Estimated Survival Rate
1	0.9913	-4.7480	1.5577	0.9900
2	0.9809	-3.9571	1.3755	0.9831
3	0.9694	-3.4875	1.2492	0.9731
4	0.9555	-3.1130	1.1356	0.9593
5	0.9423	-2.8525	1.0482	0.9413
6	0.9227	-2.5603	0.9401	0.9188
7	0.9008	-2.3105	0.8374	0.8918
8	0.8703	-2.0426	0.7142	0.8604
9	0.8288	-1.7647	0.5680	0.8252
10	0.7703	-1.4708	0.3858	0.7866
11	0.6958	-1.1902	0.1741	0.7170
12	0.6107	-0.9435	-0.0581	0.6125
13	0.5187	-0.7312	-0.3130	0.5094
14	0.4244	-0.5524	-0.5935	0.4142
15	0.3425	-0.4193	-0.8691	0.3308
16	0.2653	-0.3083	-1.1766	0.2604
17	0.2000	-0.2231	-1.5000	0.2028
18	0.1500	-0.1626	-1.8167	0.1565
19	0.1185	-0.1262	-2.0703	0.1200
20	0.0928	-0.0974	-2.3288	0.0916
21				0.0696
22				0.0527
23				0.0399
24				0.0301
25				0.0227

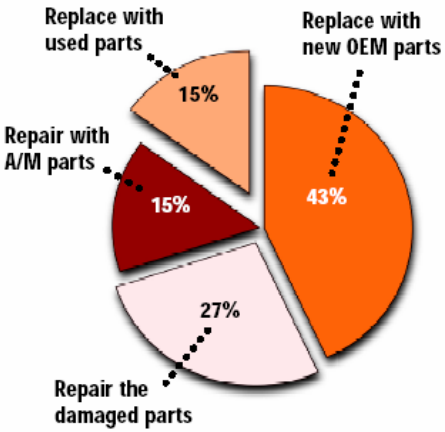
Operations Profile

Average Number of Jobs Performed Weekly, 1995 - 2003



On average, shops convert 63% of estimates to actual jobs. The average ticket per job in 2003 was $1,730, down from 2002's average of $1,810. The average ticket for DRP shops was $1,875 and $1,584 for non-DRP shops.

When making collision repairs, what percentage of the time do you:



Average POSTED Labor Rate

Metal/refinish	$41.17/hr.
Frame/structural	$48.62/hr.
Mechanical	$53.56/hr.

Do you charge a daily storage fee?

The average daily storage fee is $19.63.

Is there an alternative?

Get below the 0.5 ug / L exemption level

Spraying

- Hexavalent Chrome-free Coatings

Sanding

- Vacuum sanding likely to place you below exemption level