Fact or Fiction?

Jack W. Dini
1537 Desoto Way
Livermore, CA 94550
E-mail: jdini@comcast.net

Cleaner Air

Air pollution has been dropping for decades, and will continue to decrease. In the past 25 years, national average levels of fine particulate matter, ozone, carbon monoxide and everything else we measure have all sharply declined.[1] The EPA has noticeably slowed down in its reporting of annual updates of ambient air pollution levels, so it is not possible to report national ambient data beyond 2003. However, in 2006 the EPA did revise emissions through the end of 2005.[2] The results are included in the following table.

Table 1
Change in Emission Trends
(million tons)*

	1970-2005	2000-2005
CO	-54.9%	-13.1%
NO_x	-29.4%	-14.8%
PM10	-83.6%	-13.0%
SO_2	-51.9%	-8.0%
VOCs	-52.5%	-5.3%
Lead	-98.6%	0.0%
Total	-53.2%	-12.0%

From: S.F. Hayward & A. Kaleita, *Index of Environmental Indicators 2007*, Pacific Research Institute, San Francisco, CA, 2007; p. 40

As Joel Schwartz reports, "These sharp declines in air pollution levels occurred at the same time that Americans vastly increased total driving and energy use. Since 1980, total miles of automobile driving have grown 93%, total miles of diesel truck driving grew 112%. The amount of coal burned for electricity increased 61%. The long-term trends have been much more driving and energy use, but much less air pollution. These trends are going to continue due to federal and state air regulations that have already been adopted."[1]

Schwartz adds, "Although we've been very successful in reducing air pollution, most Americans believe we haven't reduced air pollution, or that it has even increased. The reason perception is the opposite of reality is that most public information on air pollution is false. Environmentalists claim air pollution is getting worse, when in fact it's getting better. And journalists pass along these claims without any critical review. Regulators claim we've made progress, but much work remains to be done."[1]
Some examples:

• "Smog is out of control in almost all of our major cities," reported the Sierra Club in November 2001 after the nation had achieved its two lowest smog years ever. In 2002, near the end of a fourth consecutive record-low year for soot pollution, the Public Interest Research Group published *Darkening Skies*, which claimed soot pollution was increasing. Writing in November 2002, New York Times columnist and Princeton economist Paul Krugman predicted large increases in air pollution and warned Americans, "it might be a good idea to breath now, while you still can."[3]

• At the end of the 2005 "ozone season," the environmental group Clean Air Watch put out a press release claiming, "smog problems nearly double in 2005." Regulators and journalists followed suit. The Pennsylvania Department of Environmental Protection put out a press release about 2005's higher ozone levels. And The New York Times ran a story titled, "A Hot Summer Meant More Smog." All of these groups created the appearance of a worsening ozone problem.[1] So what really happened? Turns out that 2005 was the second lowest year on record for ozone smog! However, 2004 was the lowest year. An added fact was that 2005 was one of the hottest years on record, and this favors higher ozone levels. Yet ozone remained at historic lows.[1] So when the environmental group Clean Air Watch put out a press release claiming, "smog problems nearly doubled in 2005," they were correct. Shows you how you can excite the public while holding back some key facts.

• My most favorite example is my home town of Livermore, California. In 2003 the American Lung Association gave Livermore a grade of "F." This was based on 61 hours that exceeded the federal ozone standard since 1981. In other words, 61 times for one hour in 21 years the area was not in compliance with a conservative federal standard. So, there were 7,704 days that were in compliance, or 183,899 hours that met the standard.[4] As reporter Tim Hunt wondered, "Was the lung association reaching a bit? Or exaggerating enough to make Pinocchio's nose span the 2.1 mile long Bay Bridge?"

The air in New York city has gotten so clean that folks now are aware of things they would never have smelled in the past. In October 2005, New York smelled like maple syrup. No source was identified. Early one morning in January 2007, many New York city residents awoke to a strong sulfurous odor. Although it smelled like gas, once again no source could be identified. In reporting this in the New York Times, Anthony DePalma concluded with this telling statement, "The environment of the New York region has changed dramatically over the years. In the 1950s, the city and its surroundings might have been described the same way author John Steinbeck described Cannery Row in Monterey, California, which he called "a poem, a stink, a grating noise..." "Today," said Eric A. Goldstein, a senior lawyer at the Natural Resources Defense Council (NRDC), "traditional air pollution has been reduced so much that strong odors stand out. In the past you might have had indications like this and you couldn't even distinguish the new smell from among all the pollutants," Mr. Goldstein said. "Now the air is a cleaner slate."[5]

Note that for once, an activist group, NRDC, the folks who brought us the Alar scare among others, provided some positive strokes about the environment.

Pollution from overseas

Jeannie Allen reports, "Earth-observing satellites have been discovering, often to the amazement of scientists, that air pollution is quite an intercontinental traveler. Dust from the Sahara has turned up on coral reefs in Florida, and dust from the Asian Gobi Desert has appeared as far away as the East coast of North America. Air pollution from the northeastern United States sometimes reaches Europe, and occasionally, European pollution travels the opposite direction in return."[6]

So, while the U.S. is cutting its own emissions, some nations, especially China, are belching out more and more dirty air. Traci Watson[7] notes the following. Overseas pollution could partly cancel out improvements in U.S. air quality that have cost billions of dollars. Pollution wafting into the U.S. accounts for 30% of the nation's ozone, an important component of smog. By the year 2020 says Harvard University's David Parrish, imported pollution will be the primary factor degrading visibility in our national parks. The EPA estimates that 40% of the mercury that sinks out of the air and lands in the U.S. comes from overseas. Dust from Africa's Sahara Desert blows west across the Atlantic Ocean and helps raise particle levels above federal health standards in Miami and other Southern cities.[7] Some scientists suspect that the alarming decline in Caribbean coral reefs since the late 1970s may be due in part to other, as yet unnamed pathogens imported in African dust. They note that the peak years of African dust deposition in the Caribbean match the years of major die-offs in the region's reefs.[8]

Traci Watson adds, "We are not without stain of sin. In 2001, for example, a cloud of fumes from the eastern U.S. traveled far enough to cause high levels of ozone in the Alps. Aware that it gives as well as gets air pollution, the U.S. has taken steps to address the two-way flow. In 2000, Canada and the U.S. signed a treaty requiring both nations to reduce ozone forming gases."[7]

Air emissions emanating from outside the U.S. can cause states and counties to violate the Clean Air Act air quality attainment standards. What's more, the scientific literature clearly demonstrates that in many instances, states or counties would be able to comply with attainment standards, but for emissions originating from outside the nation's borders.

Some final notes

• Automobile emissions have been reduced so much it was announced in 2005 that in California's Central Valley, which has the second-highest ozone levels in the nation, cattle are now a larger source of VOCs than cars. The average dairy cow, the San Joaquin Valley Air Pollution control District estimates, emits 19.3 pounds of VOCs each year (This doubles previous estimates of bovine flatulence.). California's San Joaquin Valley has about 2.5 million dairy cows, which implies a staggering amount of VOCs not previously accounted for in the EPAs emissions inventory. Steven Hayward reports this and adds, "These estimates are disputed, and in any event it is not clear exactly what emissions-control technology could be applied to cows."[10]

• Hayward points out another source of VOC emissions that have come to the attention of regulators: California wineries. "There are more than 100 wineries in California's Central Valley, including some of the nation's largest bulk producers such as E. & J. Gallo. According to new estimates these wineries emit almost 800 tons of VOCs a year - again far more than the auto fleet currently does. The wine industry is concerned that the same kind of emissions-control technology used in the chemical and refining industry can't be made to work with wine fermentation without damaging the wine. Stay tuned... and stock up."[10]

• Attending religious services may be more dangerous to your health than smoking a couple of packs of cigarettes each day. Candles and incense could be bad for your health. Burning incense in places of worship exposes people to dangerous levels of smoke laden with cancer-causing chemicals. Researchers in Taiwan found that the levels of benzopyrene, a polycyclic aromatic hydrocarbon (PAH) which causes cancer, were up to 45 times higher in a temple where incense was burned than in homes where residents smoked tobacco. Benzopyrene was up to 118 times higher in the temple than in areas with no indoor source of combustion such as cooking fires. Total suspended particles (TSPs) were three times higher in the temples than at a near-by traffic intersection and eleven times higher than outside the temple.[11] Other potent pollutants given off by burning incense include benzene, toluene and formaldehyde.[12]

• How clean are your windows? Canadian scientists have determined that dirty windows located in metropolitan urban areas might be hidden contributors to air pollution. J. D. Donaldson (not to be confused with the famous John G. Donaldson, AESF Past-President) and colleagues at the University of Toronto claim the grime that accumulates on windows - as well as buildings, roads and other surfaces in urban areas - could be an important source of nitrogen oxide air pollutants that combine with other air pollutants to form smog.[13]

• Lightning over the U.S. significantly increases regional ozone and other gases that affect air chemistry three to eight miles above Earth's surface. The amounts of ozone and nitrogen oxides created by lightning surpass those generated by human activities in that level of the atmosphere. Typically over the U.S., fossil fuel burning is the main cause of nitrogen oxides, which leads to the formation of ozone near the Earth's surface. However, above the Earth's surface in the free troposphere (3-8 miles high), during the summer months, lightning activity increases NO_X by as much as 90% and ozone by more than 30%. About 77 million lightning bolts annually strike the U.S. Measurements before and after lightning strikes have confirmed the generation of nitrogen oxides in the atmosphere.[14] ***P&SF***

References

1. Joel Schwartz, "Emerging Issues in Air Quality Regulation: Tough New Federal Standards for Ozone and Fine Particulate Matter," in *2007 Emerging Issues*, D.C. Bast & S. T. Karnick, Eds., The Heartland Institute, Chicago, IL, October 5, 2006; p. 69.
2. S.F. Hayward & A.L. Kaleita, *Index of Environmental Indicators 2007*, Pacific Research Institute, San Francisco, CA, 2007; p. 39.
3. Joel Schwartz, "What Americans 'Know' About Air Pollution Is False," in *2007 Energy Policy for America*, J.L. Bast & S.L. Bourne, Eds., The Heartland Institute, Chicago, IL, 2006; p. 8.
4. Tim Hunt, "Our air deserves a better grade than F," *Tri Valley Herald*, Livermore, CA, May 11, 2003; p. 8.
5. Anthony DePalma, "All the Sensitive Noses Show Just How a City Has Changed, *The New York Times*, January 10, 2007.

Continued on page 49.

Vergason Technology, Inc, is a global player in sputtered, thermal evaporation and cathodic arc thin film coating technologies. For more information please email: info@vergason.com, or visit www.vergason.com.

UPCOMING EVENTS

ASTM announces committee meetings for 2008

ASTM International (W. Conshohocken, PA) has scheduled meetings for several working committees related to the metal finishing industry during 2008, including:

ASTM International Committee B07 on Light Metals and Alloys:
May 5–7, 2008, Hyatt Regency Denver, Denver, CO
November 17–19, 2008, Fontainebleau Hotel, Miami, FL
For more information, please visit http://www.astm.org/COMMIT/B07.htm.

ASTM International Committee A01 on Steel, Stainless Steel and Related Alloys
Same venues as above
For more information, please visit http://www.astm.org/COMMIT/A01.htm.

ASTM International Committee B02 on Nonferrous Metals and Alloys
Same venues as above
For more information, please visit http://www.astm.org/COMMIT/B02.htm.

ASTM International Committee A05 on Metallic-Coated Iron and Steel Products
Same venues as above
For more information, please visit http://www.astm.org/COMMIT/A05.htm.

ASTM International Committee B08 on Metallic and Inorganic Coatings
May 8, 2008, Hyatt Regency Denver, Denver, CO
October 23, 2008, ASTM International Headquarters, West Conshohocken, PA
For more information, please visit http://www.astm.org/COMMIT/B08.htm.

International Surface Finishing Academy Announces 2008 Powder Coating Courses

The International Surface Finishing Academy (ISFA) (Rutherfordton, NC) recently announced dates and locations of its Powder Coating Courses for 2008. The courses, instructed by the powder coating experts of TIGER Drylac USA, cover the fundamentals of powder coating from both commercial and industrial perspectives. Over a period of two days, students will be instructed in a wide variety of relevant topics, including pretreatment, shop and equipment maintenance, equipment selection, oven and cure issues, powder selection, troubleshooting and tips and tricks for the custom coater.

Participants will be fully instructed in the formulation and manufacture of powder coating. Locations and dates for the 2008 courses are:

April 9-10, Denver, CO
June 3-4, Chicago, IL
August 5-6, Mystic, CT
September 15-16, Charleston, SC
November 5-6, San Diego, CA

For more information about the upcoming powder courses, please contact Paul Fisher by phone at (828) 429-2618, or by e-mail at info@surfacefinishingacademy.com. You may also visit the website, www.surfacefinishingacademy.com for a detailed itinerary and hotel information.

Educational conference offers wealth of learning opportunities for metalformers

Attendees visiting Regional METALFORM Birmingham, the most respected, results-oriented stamping and fabricating exposition in North America, have the opportunity to attend educational sessions to enhance their show experience. Held in conjunction with the exposition, the METALFORM Conference is scheduled for April 1-3, 2008, at the Birmingham-Jefferson Convention Complex in Birmingham, AL.

The conference allows metalforming-company employees to expand their industry knowledge and skills while seeing and learning about the latest technology at the trade show. More than 40 presentations will highlight cost-effective solutions and practical ideas to keep companies on the leading edge. Presentations range from fundamentals for beginners to advanced concepts for experienced metalformers. A variety of topics are planned, including:

- Software
- Transfer Technology
- Value Added for Stamping
- Safety
- Tooling
- Sensors and Control Systems
- Metal Finishing/Lubricants
- Die Setup/QDC
- Press Technology and Maintenance
- Tooling Design
- Automation/Assembly
- Servo Presses
- Working with High-Strength Steel

Visit www.metalform.com/2008 for a complete listing of speakers and presentations. Additional information about the show, including registration details and a list of exhibitors, also can be found on the site.

Regional METALFORM Birmingham is sponsored by the Precision Metalforming Association (PMA), the full-service trade association representing the metalforming industry of North America. Visit www.pma.org for more information about PMA. ***P&SF***

Fact or Fiction

Continued from page 23

6. Jeannie Allen, "Whose Air is it Anyway?" *ChemMatters*, **21**, 6 (October 2003); and http://www.nasa.gov/audience/foreducators/5-8/features/F_Whose_Air.html.
7. Traci Watson, "Air pollution from other countries drifts into USA," *USA Today*, March 14, 2005; p. 1.
8. Karen Wright, "Blown Away," *Discover*, **26** (3), 32 (2005); http://discovermagazine.com/2005/mar/cover
9. W.L. Kovacs, "EPA Should Help States Required to Clean Up Foreign Pollution," *Environment & Climate News*, **10** (3), 7 (2007); http://www.heartland.org/Article.cfm?artId=20640.
10. S.F. Hayward, *Index of Leading Environmental Indicators 2006*, Pacific Research Institute, San Francisco, CA, 2006; p. 52.
11. Clodagh O'Brien, "Holy smoke," *New Scientist*, **171** (2302), 5 (August 4, 2001).
12. "Talking sense about incense and other scents," *Wellness Letter*, University of California, Berkeley, **17** (2), 5 (2001).
13. "Study: Dirty windows aid air pollution," Physorg.com, http://www.physorg.com/news98378029.html
14. "Surprise! Lightning Has Big Effect on Atmospheric chemistry," *NASA News Archive*, March 19, 2003.

Editor's Note: We would like to mention that Mr. Dini is having so much fun providing these columns that he is churning them out at a rate faster than we can publish them on a monthly basis. Indeed, he has created a blog at http://myblogscience.blogspot.com. If you wish to see more of Mr. Dini's provocative works that might not have appeared in *Plating & Surface Finishing,* check it out.