SPECIAL REPORT: OUR VANISHING OZONE

Electronics firms erode ozone

By Rae Tyson
USA TODAY

A USA TODAY analysis of EPA data offers the first glimpse of how U.S. manufacturers are contributing to destruction of the Earth's protective ozone layer.

"It tends to focus our attention," says David Chittick, environmental safety vice president at AT&T, the nation's fifth largest source of ozone-depleting chemicals.

The EPA data — an inventory of 1987 chemical emissions — include three causing ozone damage: Freon 113, carbon tetrachloride, methyl chloroform.

All three are widely used as solvents for cleaning metal, electronic and computer parts.

As a result, USA TODAY's list of top ozone depleters is dominated by electronics producers: AT&T, IBM, General Electric, Honeywell.

Together, the three chemicals represent about 60 percent of all ozone-eating emissions from U.S. factories.

Not counted in the EPA inventory were chlorofluorocarbons used in refrigerators, car air conditioners or aerosol cans — which account for about 40 percent of all ozone-destroying chemicals.

Worldwide, 2.3 billion pounds of ozone-eating CFCs are produced annually. The USA is the top producer, followed by Europe and Japan.

EPA's approach has been to gradually phase in mandatory cuts in the production of ozone-producing chemicals, forcing industries using those chemicals to find alternatives.

EPA acknowledges that high-tech industries are the worst, but says they are doing the most.

John Hoffman, head of EPA's global change office, says reporting the large amounts of CFCs high-tech companies put into the environment "might put public pressure on the people who are doing the best job" of finding acceptable substitutes.

California scientist Sherry Rowland discovered the deteriorating ozone layer in 1973, which led to a 1978 ban on aerosols using CFCs.

In 1985, a group of British scientists verified Rowland's theory with the discovery of a hole in Antarctica's protective ozone shield.

A new study reported in today's issue of the British journal *Nature* reveals a similar hole in the Arctic ozone shield. The study found a 3 percent decline in ozone, using balloon-borne instruments, at 14-to-16 miles altitude.

Unless ozone-depleting emissions are reduced, EPA estimates an additional 3.2 million skin cancer deaths worldwide by 2075. If cuts targeted in a 1987 treaty are met, skin cancer deaths can be reduced to 142,000.

"It's a frightening prospect," says Liz Cook, of the Friends of the Earth's ozone campaign.

Ozone is both a benefit and a detriment. At ground level, sunlight acts on auto pollutants to create ozone, a key element of unhealthy urban smog. In the stratosphere 12 to 20 miles above Earth, ozone shields us from harmful ultraviolet rays.

What this report is about

This report is based on a USA TODAY computer analysis of three ozone-depleting chemicals listed on 75,000 reports to the Environmental Protection Agency as part of its 1987 Toxic Release Inventory (covering 328 toxic chemicals).

▶ **Problem:** Chlorofluorocarbon, or CFC, molecules drift to ozone layers 12 to 20 miles above Earth. There, sunlight changes the molecules' structures, creating new ones that merge with and then destroy the ozone molecules that protect us from harmful ultraviolet sunlight.

▶ **CFCs:** Long-lasting threat — Freon 113 takes 88 years to disintegrate; carbon tetrachloride, 67 years; methyl chloroform, 8.5 years.

▶ Key findings, 1A; Worldwide environmental concern, 4A

California: Top ozone troublemaker

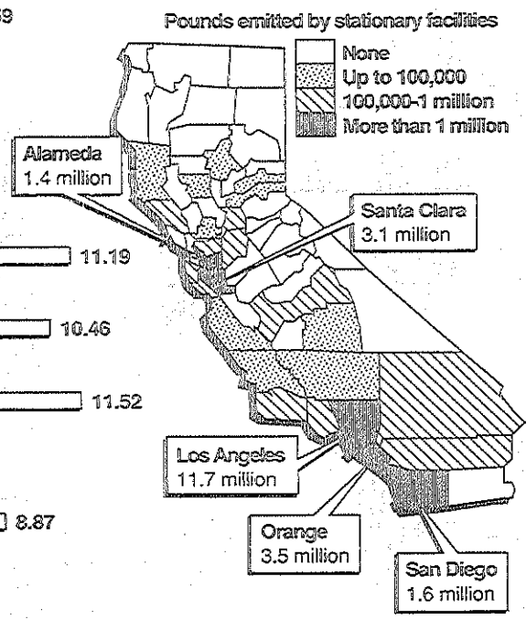
California's manufacturing makes it far and away the No. 1 state in emissions of three chlorofluorocarbons reported to the Environmental Protection Agency.

(in millions of pounds)

Ala.	3.4
Alaska	.02
Ariz.	4.92
Ark.	4.11
Calif.	24.7
Colo.	2.95
Conn.	12.09
Del.	.31
Fla.	4.62
Ga.	2.36
Hawaii	.07
Idaho	.26
Ill.	11.92
Ind.	10.62
Iowa	3.45
Kan.	1.37
Ky.	3.14
La.	1.67
Maine	1.52
Md.	1.71
Mass.	6.44
Mich.	7.59
Minn.	5.23
Miss.	1.61
Mo.	4.67
Mont.	.001
Neb.	1.79
Nev.	0.0
N.H.	1.95
N.J.	3.03
N.M.	.89
N.Y.	11.19
N.C.	5.88
N.D.	.06
Ohio	10.46
Okla.	1.30
Ore.	1.17
Pa.	11.52
R.I.	1.09
S.C.	5.91
S.D.	.49
Tenn.	5.70
Texas	8.87
Utah	2.41
Vt.	.46
Va.	3.95
Wash.	2.47
W.Va.	1.46
Wis.	5.88
Wyo.	.03

Spotlight on California: L.A. County the worst

Top counties for chlorofluorocarbon emissions:



By J.L. Albert, USA TODAY

Switch is on in Golden State

By Denise Kalette
USA TODAY

SAN JOSE, Calif. — California, despite its environmentally sensitive image, ranks first among states in ozone depletion.

The 24.7 million pounds of ozone-destroying chemicals discharged in 1987 account for more than 10 percent of the volume from all 50 states.

Los Angeles is the state's top county for CFCs. Methyl chloroform, a CFC used as a solvent, is abundant in aerospace, electronics and chemical plants. Aerospace is "incredibly toxic," says Jill Ratner, a lawyer with Citizens for a Better Environment.

In California, as elsewhere, EPA's new toxics report has located many new CFC sources, says Charles Elkins, director of EPA's office of toxic substances. Many are small companies, collectively a major source of pollution. A "phase-down" is under way, Elkins says. Besides the threat of legal action, "the marketplace is going to force these people to use less."

IBM Corp. here is the state's top ozone-depleting facility in EPA's current report, having discharged 1.5 million pounds of CFCs in 1987. But, officials say the San Jose plant, which makes computer disc drives, will show a 66 percent drop in CFCs in the next report.

IBM is switching from Freon, a solvent, to purified water and hot air, says spokesman Andy Kendzie. "The parts we manufacture have to be microscopically clean. The deionized water and hot air not only clean the parts, but leave them free of particles."

IBM, which dominates the lower Silicon Valley landscape, employing 10,000 people in a cluster of 49 buildings, is searching for less harmful chemicals.

Santa Clara County, heart of Silicon Valley's electronics industry, ranks high in CFCs, mainly from solvents for chip manufacturing. While many valley firms use highly toxic gases, the ozone-depleting chemicals are not directly harmful to humans. But they rise to the stratosphere and sit there for decades, destroying the ozone shield above the Earth.

"Here in the birthplace of the high-tech revolution, they have all had significant environmental problems," says Ted Smith, head of the Silicon Valley Toxics Coalition.

For many, the EPA toxics list serves as a warning. Says lawyer Ratner: "There is a really desperate need to take rapid action here, and phase these chemicals out as rapidly as we can."

Computer analysis was directed by Larry Sanders. Computer processing: David McKamey, Marty Bradley, Anil Sodhy and Rob Linehan. Editing: Carol Knopes, Michael Zuckerman. Research: Joan Murphy and Ted Moncreiff.

Industries' options: From citrus to recycling

By J.L. Albert, USA TODAY

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U.S. industries are scrambling for alternatives to destructive chlorofluorocarbons.

"We obviously feel some sense of concern," said Joe Dahm, an official at IBM. "We're constantly looking for new chemicals. We're doing everything technologically possible to reduce emissions."

Motivating industry is an international treaty requiring 50 percent cuts in CFC use by 2000.

Some alternative ideas:

▶ AT&T is encouraged by a non-CFC cleaning solvent called BioAct EC7 — made from citrus waste, pine bark and other organic chemicals.

"If I told anyone five years ago that the solution to the (CFC) solvent problem was orange peels, I would have been laughed out of town," says senior associate Irving Mintzer of the World Resources Institute in Washington, D.C.

▶ The polystyrene food packaging industry has nearly eliminated CFCs from its production processes.

▶ About 6,000 USA hospitals are testing a mixture of ethylene oxide and carbon dioxide to sterilize medical equipment. Currently, the hospitals are using a CFC product for sterilization.

▶ General Motors says it'll reduce emissions significantly by using other chemicals for parts degreasing.

GM has, so far, failed to find acceptable substitutes for CFCs used to make electronic components, including auto computers. "That's going to be the tough one," says Gerald Stoffet, GM's assistant director of auto emissions controls.

▶ DuPont, Allied-Signal and other leading CFC makers are searching for substitute chemicals to use in refrigerators and air conditioners.

"That's going to take some clever engineering but there are some pretty clever engineers in the United States," says Mintzer.

▶ Auto air-conditioning repair shops voluntarily have vowed to recycle CFCs and similar recycling has been urged for refrigeration and air-conditioning repair firms.

▶ EPA is negotiating with the Pentagon to eliminate military purchasing specifications that require the use of ozone-depleting chemicals.

▶ Foam producers have encountered problems removing CFCs, used to blow foam into molds.

"There isn't a good solution for them right now," says John Hoffman, head of EPA's division of global change.

Further, Sen. John Chafee, R-R.I., has introduced a bill that would force cuts in CFC use. "It isn't enough to say, we are going to decrease the production of these chemicals voluntarily," says Chafee.

Plants sending out most CFCs

Out of more than 75,000 factories, these 10 released the most CFCs into the environment, according to the EPA Toxic Release Inventory. This list shows the emissions (in pounds for 1987 and 1988) of any or all of Freon 113, carbon tetrachloride, and methyl chloroform.

Endicott, N.Y. — IBM plant; computer panels, cards, boards
1987..... 2,620,500 1988..... N.A.

East Hartford, Conn. — Pratt & Whitney; aircraft engines
1987..... 1,955,900 1988..... N.A.

San Jose, Calif. — IBM plant; computer chips
1987..... 1,472,320 1988..... 500,000

Nashville — Werthan Industries; packaging materials
1987..... 1,456,738 1988..... N.A.

Aurora, Ill. — Allsteel Inc.[1]; steel furniture
1987..... 1,337,579 1988..... N.A.

Russellville, Ky. — E.R. Carpenter Co.; urethane foam
1987..... 1,231,700 1988..... N.A.

Phoenix, Ariz. — Allied-Signal Garrett Engine Div.; aircraft gas turbine engines
1987..... 1,183,000 1988..... 757,000

Peoria, Ill. — Keystone Steel & Wire Co.; fencing, nails
1987..... 1,100,000 1988..... N.A.

Marcus Hook, Pa. — Congoleum; resilient flooring
1987..... 1,089,895 1988..... N.A.

Dallas — U.S. Naval Weapons Plant, LTV Aircraft Products Group; aircraft components
1987..... 1,088,000 1988..... 1,097,900

1 – Company says it erred in EPA filing and actual number is 142,600 pounds.

Firms releasing largest amounts

Companies releasing the most CFCs — Freon 113, carbon tetrachloride, methyl chloroform:

	All CFCs (pounds)
General Motors	6,461,865
Products: Autos, aircraft, electronics	
United Technologies	6,088,145
Products: Aerospace, air conditioning, aircraft engines	
IBM	5,853,976
Products: Computers, semiconductors, telecommunications equipment	
General Electric	5,419,141
Products: Appliances, aerospace, engines, plastics	
AT&T	4,344,513
Products: Telecommunications equipment	
Allied-Signal	3,812,087
Products: Aerospace, chemicals, auto parts, turbines	
E.R. Carpenter	3,307,098
Products: Urethane foam	
Rockwell International	2,718,305
Products: Electronics, auto parts, aerospace	
Honeywell	2,520,464
Products: Instruments, controls, aerospace	
Textron	2,392,530
Products: Aerospace, auto parts	