United States
Environmental Protection
Agency

Office of Reinvention
Washington, DC 20460

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www.epa.gov

XL Project Progress Report
Intel Corporation

On March 16, 1995, the Clinton Administration announced a portfolio of reinvention initiatives to be implemented by the U.S. Environmental Protection Agency (EPA) as a part of its efforts to achieve greater public health and environmental protection at a more reasonable cost. Through Project XL, which stands for eXcellence and Leadership, EPA enters into specific project agreements with public or private sector sponsors to test regulatory, policy, or procedural alternatives that will produce data and experiences to help the Agency make improvements in the current system of environmental protection. The goal of Project XL is to implement 50 projects that will test ways of producing superior environmental performance with improved economic efficiencies, while increasing public participation through active stakeholder processes. As of October 1998, 10 XL projects are in the implementation phase and 20 XL projects are under development. Project XL Progress Reports provide project-specific overviews of the status of XL projects that are implementing Final Project Agreements (FPAs). The progress reports are available on the Internet via EPA's Project XL web site at http://www.epa.gov.ProjectXL. Hard copies may be obtained by contacting the Office of Reinvention's Project XL Docket at 202-260-7434. General information on Project XL is available on the web site or by contacting the general information number at 202-260-5754.

Background

Intel Corporation, the world's largest semiconductor manufacturer, has operated the Fab 12 facility in Chandler, Arizona since 1996. Fab 12 is Intel's newest chip fabrication facility operating on the 720-acre Ocotillo site. The largest facility on the site, FAB 12, is the company's newest chip fabrication facility. Intel's Project XL agreement applies to the entire Ocotillo site, including any new semiconductor-related facilities that may be built at the site. Intel is striving to reduce the environmental impact of its fabrication process by implementing an environmental management master plan that includes both voluntary and mandatory commitments for environmental performance, and is tailored to meet both the operational needs of the facility and the concerns of the local community.

Intel XL Project
Chandler, Arizona

In the highly competitive microprocessor industry, success is directly

Major Milestones

June 30, 1995	November 19, 1996	April, 1998	October 1998	December 31, 2001
Intel XL Proposal Submitted	Final Project Agreement Signed	First Annual Stakeholder Meeting	Semi-annual Stakeholder Meeting	Termination/Renewal of FPA

related to a manufacturer's ability to bring new technologies to the marketplace ahead of domestic and foreign competitors. The dynamic nature of this industry makes it crucial for a company to obtain maximum flexibility in its operations. Each new generation of microprocessors requires continual process experimentation, involving frequent changes in equipment and process chemicals. A typical Intel plant can undertake 35 to 40 process chemical changes annually, and begin manufacturing a complete new generation of chips every 18 to 30 months. Given these operating characteristics, standard Federal air quality permit requirements increase the potential for delays in the development and production of new products and product lines. The Intel XL project has the potential to minimize these delays and provide more flexibility in Intel's operations, by allowing the facility to make operational changes without a permit review for each change, as long as the overall permit limits are met.

In the FPA, Intel has committed to limit emissions of criteria and hazardous air pollutants (HAPs), and to meet other environmental goals that are designed to improve the area's air and water quality, conserve water, reduce the generation of hazardous and nonhazardous waste, and improve the general environmental performance of the facility. The anticipated environmental benefits from this project are the following:

- Maintaining a site-wide cap on air emissions for nitrogen oxide (NO_x), sulfur dioxide (SO_x), carbon monoxide (CO), particulate matter (PM10), and volatile organic compounds (VOCs) at levels that ensure that the current site, including any future semiconductor manufacturing plants built there, is and remains a minor air emissions source, as defined by the Clean Air Act (CAA).
- Using state guidelines to establish enforceable caps on emissions that may affect the community adjacent to the site. These standards also will be used to voluntarily set lower emissions levels to increase protection for those working at or visiting the facility.
- Conserving city water resources by increasing the amount of recycled manufacturing effluent to 65% of the volume of fresh water used, by 2001.
- Reducing the amount of fresh water used by using 100% treated effluent for the semiconductor manufacturing cooling tower and landscaping.
- Recycling up to 60% of the solid waste and up to 70% of the nonhazardous chemical wastes the facility generates, by the year 2001.
- Recycling an average of about half of the hazardous waste the facility generates over the five-year period between 1997 and 2001.
- Maintaining a minimum setback of 1,000 feet from the closest manufacturing-related building to residential property.
- Reducing vehicle miles traveled by employees through a trip reduction program.
- Participating in equipment donation and environmental education programs.

Regulatory Flexibility

The Intel XL Project establishes a long-term plan to minimize the Ocotillo facility's environmental impact on local air, land, and water quality, to minimize both its use of fresh water and its generation of waste, and to undertake a number of other actions to enhance the overall environmental quality of the community. As an incentive to achieve environmental performance at the Ocotillo facility, EPA, the Arizona Department of Environmental Quality (ADEQ), the Maricopa County Bureau of Air Pollution Control, and the City of Chandler will provide a more flexible and cost-effective process for regulatory management. The FPA provides regulatory flexibility in the areas of air quality permitting, environmental performance reporting, and innovative technology.

The statutory programs, and the EPA offices administering the programs, that affect the Intel XL project are:

- Clean Air Act (CAA) programs administered by EPA's Office of Air Quality Planning and Standards;
- Clean Water Act (CWA) programs administered by EPA's Office of Wastewater Management and EPA's Office of Wetlands, Oceans, and Watersheds;
- Resource Conservation and Recovery Act (RCRA) programs administered by EPA's Office of Solid Waste; and
- Pollution Prevention Act programs administered by EPA's Office of Prevention, Pesticides, and Toxic Substances.

The parties to the FPA have designated the ADEQ as the coordinating agency for the FPA. This role includes maintaining public records, coordinating implementation issues such as the conduct of inspections, and considering compliance issues or enforcement actions. The signatories anticipated that consolidating the coordination in one agency would enhance the effective administration of the FPA, streamline regulatory oversight, and coordinate approaches to environmental issues that arise at the Ocotillo site. The oversight of the air quality permit conditions is delegated to the Maricopa County Environmental Services Department (MCESD). The oversight of the industrial user wastewater discharge permit is designated to the City of Chandler.

Air Quality Permitting. The FPA and revised air quality permit provide Intel with the flexibility to make equipment and process changes and construct new facilities at the site without air quality permit reviews, as long as the Plant Site Emission Limits (PSELs) are not exceeded and all other FPA and permit limits are met. To provide an additional safety factor, Arizona Ambient Air Quality Guideline limits for HAPs will not be exceeded at the Intel facility property line or elsewhere on the site. This flexibility in air quality regulation allows Intel to eliminate potentially 30-50 permit reviews a year and bring new products to market faster.

Environmental Performance Reporting. Compliance with PSELs will be verified through periodic emissions reporting. EPA and Arizona are allowing Intel the flexibility to consolidate routine reports into four quarterly reports and one annual report. Such periodic reporting will allow the public to verify that Intel has fully complied with the PSELs in the air quality permit. These reports are available on the Internet via EPA's Project XL web site at http://www.epa.gov.ProjectXL.

Effluent Discharge Permitting. The effluent discharge limitations, which are contained in a separate permit, are incorporated into the FPA by reference. The reporting of these discharges is incorporated into the quarterly and annual reports submitted under the FPA. This reporting system provides Intel with a more flexible reporting format, and makes a consolidated environmental report available to the signatory agencies and the public.

Promoting Innovation and System Change

Project XL provides EPA opportunities to explore and implement flexible approaches that protect the environment and advance collaboration with stakeholders. Specifically, the Intel XL project promotes innovation and system change in the following areas:

Consolidated Reporting. The XL project allows Intel to consolidate the reporting for Federal, state, and local permitting and regulatory programs into four quarterly and one annual reports and to make these reports available on the Internet. The required data and reporting format were designed in conjunction with the EPA; state, county, and local regulatory authorities; and a Community Advisory Panel (CAP) consisting of area residents. EPA anticipates that this innovation will be incorporated into future XL projects, as EPA will work with sponsors, other regulatory authorities, and stakeholders to develop similar reporting formats and to make them available on the Internet. This project will serve as a test for sector-wide collection of higher quality information from regulated industries, and directly influence the development of the comprehensive information management plan to be developed by EPA's consolidated Environmental Information Office.

Internet Reporting. In addition to filing the quarterly and annual reports with regulatory authorities Intel has made them available on a web site dedicated to this XL project. The site also includes historical information pertaining to the FPA, such as minutes of previous public meetings, and public comments and responses. The experience gained through this reporting approach will contribute to the development of a generic process for disseminating high-quality information to regulatory authorities and the regulated community.

Air Permits. The Intel XL project is testing two of several alternatives for improving air permitting. These include pre-approval and elimination of review of specific manufacturing process changes, if emissions remain under a capped amount; and pre-approval of a major plant expansion, if emissions remain below a capped amount for the entire site. These emission caps are set at levels low enough for the entire site to remain a minor source of criteria and hazardous air pollutants under the Clean Air Act. This test will directly influence EPA's sector-based action plan and the Pollution Prevention in Permitting Program.

Project Commitment Summary

The tables in this section and the Environmental Performance section summarize progress in meeting commitments described in the FPA for Intel's facility in Ocotillo, Arizona.

Commitment	Status (9/30/98)
Plant Site Emission Limits (PSELs)	
Limits the emissions of the following: volatile organic compounds (VOCs), inorganic hazardous air pollutants (HAPs), organic HAPs, nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM10), phosphine, sulfuric acid, and new chemicals that are brought on-site that produce air emissions.	All PSELs have been achieved through the third quarter of 1998.
Air Quality Evaluation and Management	
Screen modeling analysis whenever Intel uses a new chemical for which Arizona Ambient Air Quality Guidelines has been established.	Screen modeled four new chemicals associated with the 0.25 micron process in the fourth quarter 1997.
Consult with the Maricopa County Environmental Services Department and the Arizona Department of Health Services in conjunction with new chemicals that are introduced and have not been evaluated.	No new chemicals that have not been evaluated have been introduced.
Develop production and performance standard.	A standardized unit of production activity, called a production unit factor (PUF), against which to measure emissions was developed in 1996. The ratio of tons of emissions to PUFs for all of 1997 were provided in the 1997 Annual Report, and future annual reports will include similar performance measures that may be compared to this baseline.

Commitment	Status (9/30/98)
Reporting of Air Emissions	
Quarterly report of actual air emissions of all pollutants subject to PSELs or limits otherwise identified.	Quarterly reports through the third quarter of 1998 filed on schedule.
Annual summary of actual aggregate emissions of all pollutants subject to PSELs or limits otherwise identified.	Annual summary for 1997 filed on schedule. Quarterly reports include summaries for previous 12 months.
Annual summary of known actual emissions of individual HAPs emitted above 1,000 pounds per year.	The 1997 annual report indicates there were no individual HAP emission above 1,000 pounds.
Annual list of known individual HAPs emitted in quantities less than or equal to 1,000 lbs per year.	The 1997 annual report includes aggregate amounts of emissions of known HAPs, and lists 3 organic and 4 inorganic HAPs that fall into this category.
Annual report of VOCs & HAPs per unit of production (PUF).	The 1997 Annual Report included the following ratios of tons of emissions to PUFs: $1.28E^{-06}$ for Vocs, and $9.40E^{-08}$ for HAPs. The PUF = square inches of silicon processed/feature size. Feature size is the width of the smallest transistor, which was 0.35 microns in 1997.
General Reporting	
Prepare consolidated reports quarterly for signatory agencies, and make the reports available to the public.	Completed all seven quarterly reports through the third quarter of 1998.
Prepare annual summary report.	Completed 1997 annual report.
Water and Wastewater Use	
Manufacturing effluent will be treated for reuse or reinjection into the groundwater supply, according to the following timetable: 45% of freshwater volume intake in 1997, 55% in 1999, and 65% in 2001.	Achieved 66% for 1997 and 62% for the first three quarters of 1998.
Use treated effluent water for 100% of the water used for cooling tower makeup and landscaping, by the end of 1997.	Achieved 80% for 1997 and 98% for the first three quarters of 1998.
Management of Stormwater	
Use secondary containment areas, best management practices, and retention basins.	Achieved prior to signing of FPA.
Management of Waste	
Recycle substantial portions of solid, hazardous, and nonhazardous chemical waste, according to a schedule in the FPA.	Achieved through the third quarter of 1998.

Commitment	Status (9/30/98)
Intel Corporate Design for the Environment Program (DFE)	
Implement the corporate DFE program, which seeks to develop environmentally compatible processes and products.	Being implemented as part of Intel's corporate-wide effort to design improvements for environmental management and performance into manufacturing processes during the development stage.
Accidental Spill Contingency Planning	
Implement a single emergency plan for the facility that integrates all applicable environmental requirements as they relate to emergency planning.	Emergency plan was implemented in the first quarter of 1997.
Trip Reduction Program for Intel Employees	
Implement and maintain ongoing car pool and other trip reduction activities.	Ride share registration has grown from 231 by 9/30/97 to 951 by 9/30/98.
Property Setback for the Site	
Maintain a minimum setback of 1,000 feet from the closest manufacturing-related building to residential property, and use contoured landscaping to add to the aesthetic appeal of the setback.	The 1,000 foot setback has been maintained for all plant expansions.
Environmental and Education in the Community	
Ongoing participation in environmental mentoring and educational activities targeted at various groups in the community.	Third quarter 1998 activities included: Intel volunteers completed a cleanup and painting project in a local elementary school; participated in a partnership with the City of Chandler to repair and donate discarded bicycles; and prepared, painted and cleaned up housing for homeless people and victims of domestic violence.
Donation of Computers and Manufacturing Equipment	
Ongoing program to donate new and used computers to schools and libraries, and used manufacturing equipment to universities.	Donated 455 personal computers in 1997. Donated 1,370 personal computers through the third quarter of 1998.

Environmental Performance

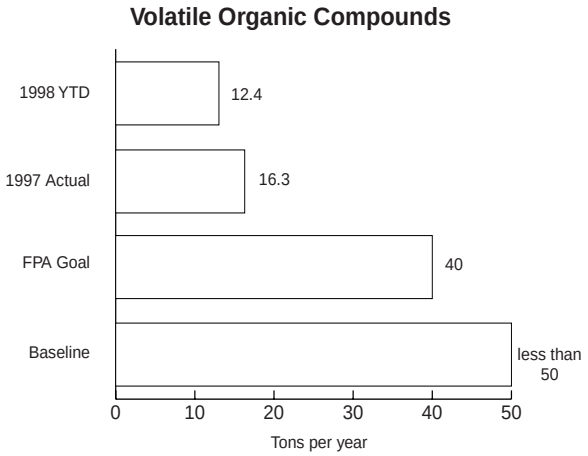
This section summarizes Intel's progress in meeting the environmental performance commitments described in the FPA, in comparison to the FPA goals and what would have been required under conventional environmental regulations for minor sources in National Ambient Air Quality Standards (NAAQS) nonattainment areas. Because the plant was new at the time the FPA was developed, there were no data upon which to establish a baseline. Therefore, the "baseline" used in this section is based on what a conventional minor source permit might have allowed. All the air quality permit and wastewater discharge permit commitments are enforceable under various environmental laws. There are no regulatory requirements for the other commitments.

Ocotillo Plant Environmental Performance

TPY=tons per year
T-YTD=tons-year to date (9/30/98)

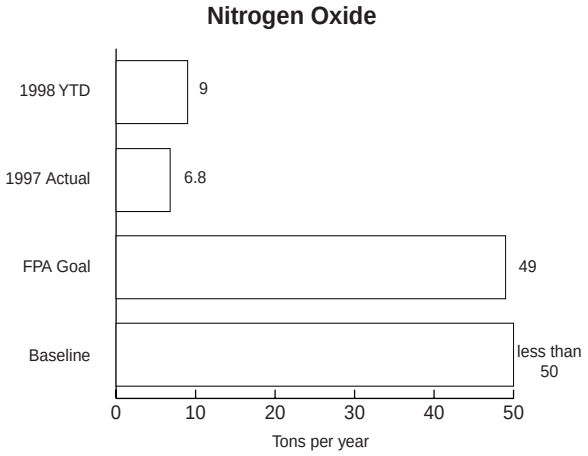
Volatile Organic Compounds (VOCs): Intel has committed to capping the emissions of VOCs at 40 TPY for the entire facility. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire Ocotillo site stays within this and other established limits. The baseline shown is based on an estimate of what would have been allowed under a conventional minor source air quality permit.

Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.



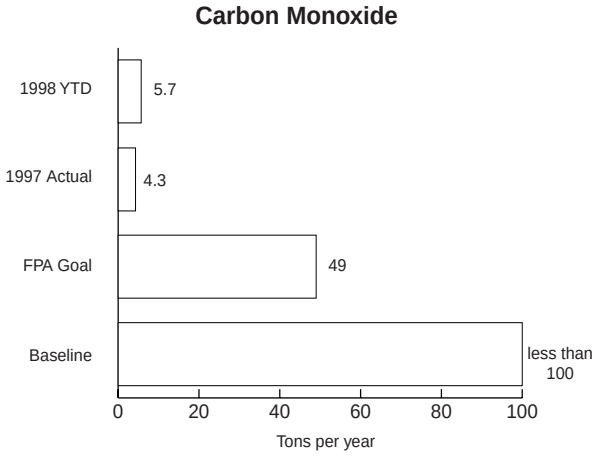
Nitrogen Oxide (NOx): Intel has committed to capping the emissions of NO_x at 49 TPY for the entire site. The FPA provides Intel the flexibility to make changes to existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline shown is based on an estimate of what would have been allowed under a conventional minor source air quality permit.

Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.



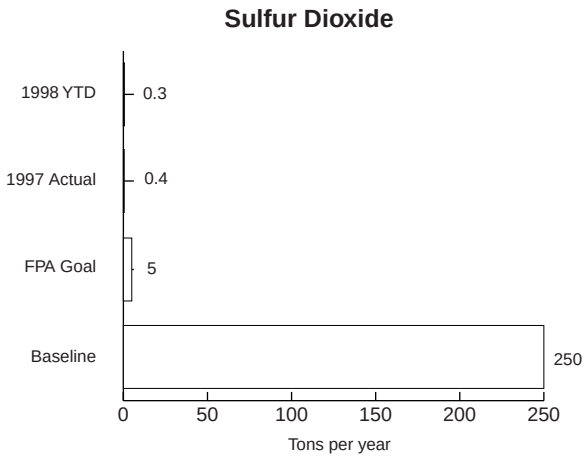
Carbon Monoxide (CO): Intel has committed to capping the emissions of CO at 49 TPY for the entire site. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline shown is based on an estimate of what would have been allowed under a conventional minor source air quality permit.

Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.



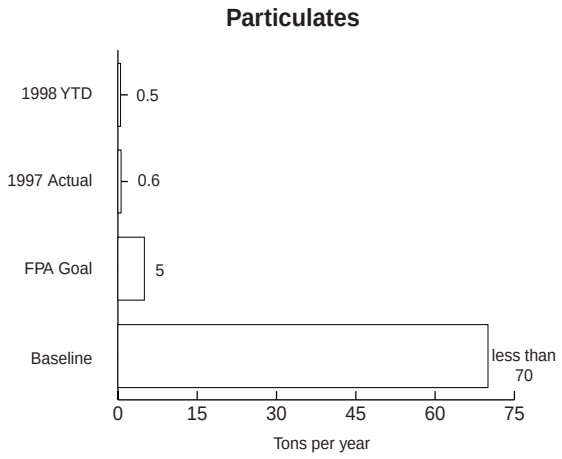
Sulfur Dioxide (SO_2): Intel has committed to capping the emissions of sulfur dioxide at 5 TPY for the entire site. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline shown is based on an estimate of what would have been allowed under a conventional minor source air quality permit.

Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.



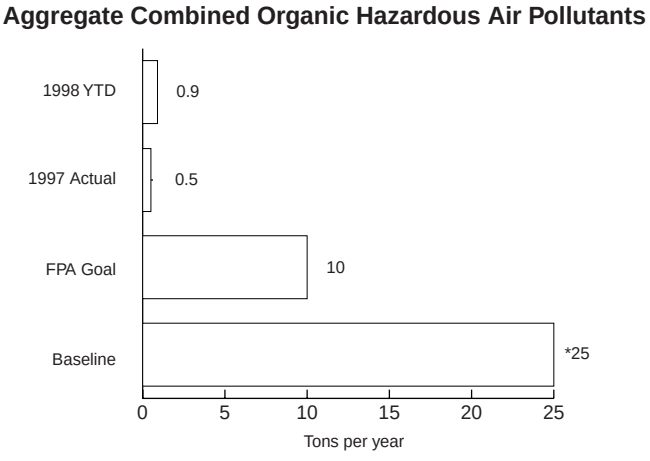
Particulates (PM10): Intel has committed to capping the emissions of particulate matter at 5 TPY for the entire site. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline shown is based on an estimate of what would have been allowed under a conventional minor source air quality permit.

Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.



Aggregate Combined Organic Hazardous Air Pollutants (HAPs): Intel has committed to capping the emissions of organic HAPs at 10 TPY for the entire site. Organic HAPs include methanol, xylene, and ethylene glycol. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline of 25 TPY refers to a total of organic and inorganic HAPs, which is what would have been allowed under a conventional minor source air quality permit. The combined total commitment for organic and inorganic HAPs under the XL permit is now 20 TPY.

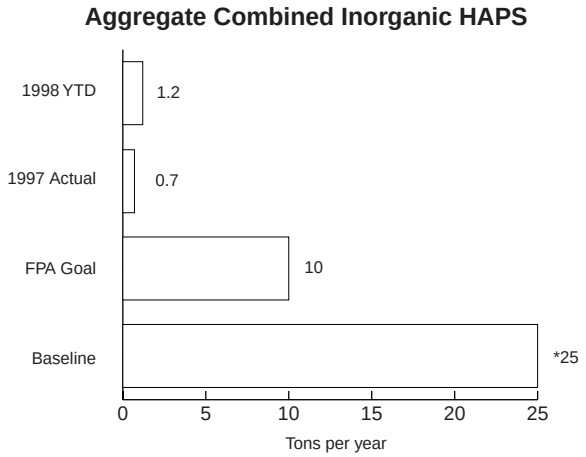
Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.



*The baseline includes combined organic and inorganic HAPs.

Aggregate Combined Inorganic Hazardous Air Pollutants (HAPs): Intel has committed to capping the emissions of inorganic HAPs at 10 TPY for the entire site. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline of 25 TPY refers to a total of organic and inorganic HAPs, which is what would have been allowed under a conventional minor source air quality permit. The combined total commitment for organic and inorganic HAPs under the XL permit is now 20 TPY.

Progress: The facility has remained well under the 1997 limit, and for the first three quarters of 1998.



*The baseline includes combined organic and inorganic HAPs.

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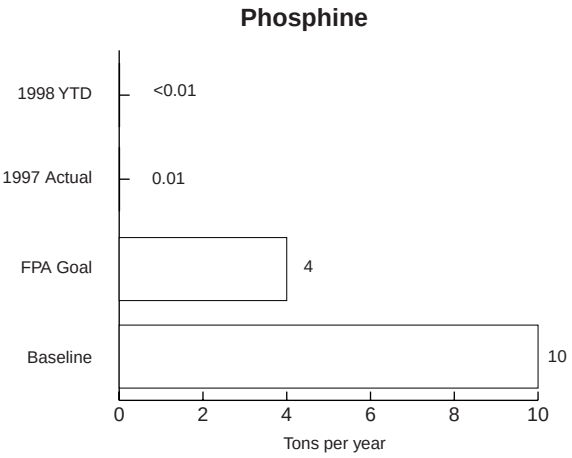
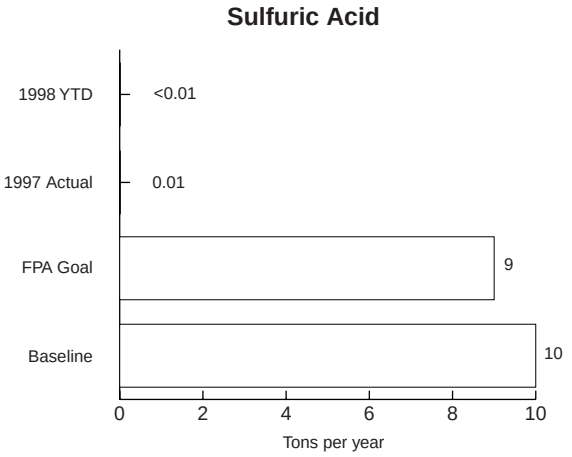
Phosphine: Intel has committed to capping the emissions of phosphine at 4 TPY for the entire site. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline of 10 TPY for a specific HAP is based on what the CAA would allow under a conventional minor source air quality permit.

Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.

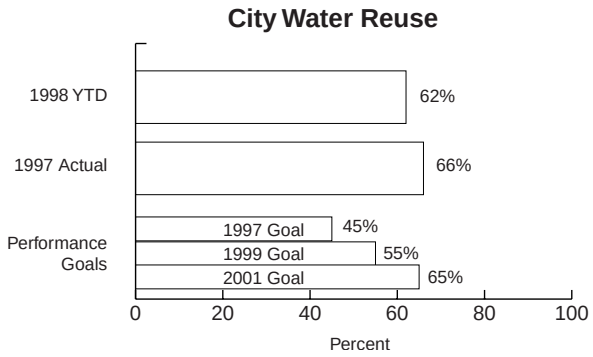


Sulfuric Acid: Intel has committed to capping the emissions of sulfuric acid at 9 TPY for the entire site. The FPA provides Intel the flexibility to make changes to the existing manufacturing operations and to expand the plant, as long as the entire site stays within this and other established limits. The baseline of 10 TPY is based on what the CAA would allow under a conventional minor source air quality permit.

Progress: The facility has remained well under the limit for 1997, and for the first three quarters of 1998.

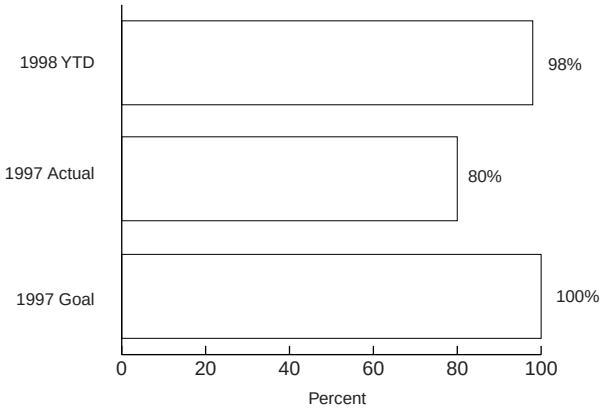


City Water Reuse: Intel has committed to increase the amount of water sent for recycling to the city's effluent treatment and recharge facility, according to the following timetable: 45% of freshwater volume in 1997, 55% in 1999, and 65% in 2001. There is no regulatory requirement or previous standard that might be considered a baseline, although water conservation is a priority environmental goal in this arid region.



Progress: For 1997 and the first three quarters of 1998, the facility has achieved the agreed-upon goals for 1997 and 1999. In 1997, Intel recycled 355 million gallons and, in the first three quarters of 1998, 298 million gallons.

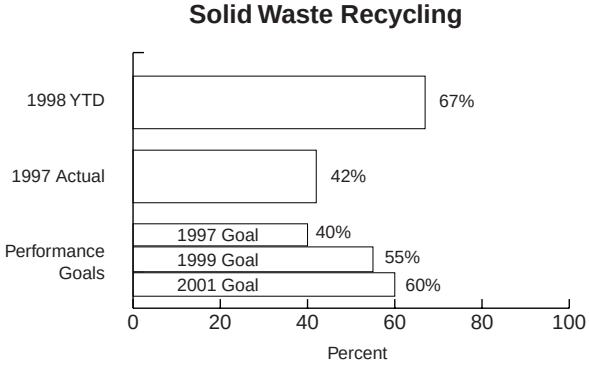
Use of Treated Wastewater: Intel has committed to using treated effluent water for semiconductor manufacturing cooling tower makeup and landscaping. The treated effluent will come from the city's wastewater reclamation facilities and treated wastewater from its manufacturing operations. There is no regulatory requirement or previous standard that might be considered a baseline, although water conservation is a priority environmental goal in this arid region.



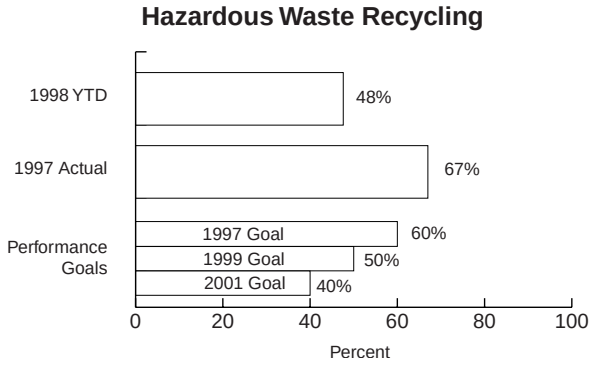
Progress: Although the facility achieve only 80% in 1997, the company reports that it achieved 98% for the first three quarters of 1998. Based on a review of the system design and after spending $300,000 annually for phosphate treatment, the company has informed the stakeholders that it would not likely be able to achieve more than 95%, without spending significant resources on additional treatment systems. In 1997 Intel reused 132 million gallons and, in the first three quarters of 1998, 119 million gallons.

Solid Waste Recycling: Intel has committed to recycle substantial portions of solid and hazardous waste according to the following schedule: 40% in 1997, 55% in 1999, and 60% in 2001. There is no regulatory requirement or previous standard that might be considered a baseline.

Progress: For all of 1997, the facility achieved the agreed-upon rate for solid waste recycling; and, for the first three quarters of 1998, exceeded the commitment for 2001.



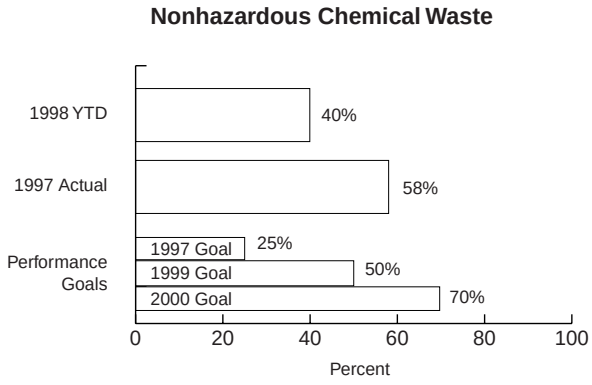
***Hazardous Waste Recycling*:** Intel has committed to recycle substantial portions of hazardous waste generated at the plant complex according to the following schedule: 60% in 1997, 50% in 1999, and 40% in 2001. Intel anticipates that the percent of hazardous waste to be recycled will decrease because it expects to reduce the amount of hazardous waste generated at this site through pollution prevention measures. There is no regulatory requirement or previous standard that might be considered a baseline.



Progress: The facility has achieved the agreed-upon rate for all of 1997. However, the percentage recycled for the first three quarters of 1998 was below both the 1997 and 1999 targets. The startup and sustaining activities of a new manufacturing process module produced a nonrecyclable waste stream, and the percentage amount recycled during the first quarter fell to 36%. Intel began executing several projects to reduce the quantities of these wastes, achieved an improvement to 63% during the third quarter of 1998, and expects to meet or exceed the 1999 goal by the fourth quarter of 1998. Actual tons recycled were 188 in 1997 and 270 in the first three quarters of 1998.

***Nonhazardous Chemical Waste*:** Intel has committed to recycle substantial portions of nonhazardous chemical waste according to the following schedule: 25% in 1997, 50% in 1999, and 70% in 2001. There is no regulatory requirement or previous standard that might be considered a baseline.

Progress: The facility has achieve the 1997 goal for all of 1997, and for the first three quarters of 1998. Intel recycled 275 tons of nonhazardous chemical waste in 1997, and 239 tons during the first three quarters of 1998.



Stakeholder Participation

Intel has worked to ensure that stakeholders are involved in the environmental design and impact assessment of its XL project. Stakeholder involvement efforts during negotiation of the FPA included:

- Use of a Community Advisory Panel (CAP) consisting of area residents to serve as a full partner in the project's development;
- An outreach effort to local citizens (including 25,000 hand-delivered notices);
- The involvement of national, regional, and local nongovernmental organizations that provided substantial comments on the project; and
- The use of EPA and Intel web sites to increase the transparency of project development and implementation.

Intel has helped establish a Stakeholder Team to ensure the involvement of national, regional, and local regulatory authorities and public members of the CAP as full partners in the project's implementation. This team meets once a quarter to review the project's progress reports. A first annual stakeholder meeting was held with the Stakeholder Team and the general public in April 1998, and a semi-annual stakeholder meeting was held in October 1998. All quarterly and annual reports are published on Intel's web site to make its environmental data publicly available as part of a standard reporting mechanism.

Six-Month Outlook

- Complete quarterly progress reports for the fourth quarter of 1998 and first quarter of 1999, within 60 days after the close of the quarters.
- Convene the CAP and other parties in January 1999 to perform an in-depth evaluation of the company's efforts toward attainment of the commitments identified in the FPA.
- Plan and implement a semi-annual stakeholders meeting in April 1999.
- Continue to execute a series of projects to reduce quantities of hazardous waste to meet or exceed the program's goal by the end of the fourth quarter of 1998.
- Enhance the site's VOC emission performance through a comprehensive approach that focuses on the following three initiatives: reduce VOCs used to clean equipment, optimize the VOC exhaust system, and upgrade the carbon concentrating condenser unit.

Project Contacts

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- Katherine Dawes, EPA Headquarters, 202-260-8394
- Gregg Workman, ADEQ, 602-207-4337
- Jo Crumbaker, Maricopa County Bureau of Air Pollution Control, 602-506-6705
- Pat Sampson, City of Chandler, 602-786-2396
- Pat Mariella, Gila River Indian Community Department of Environmental Quality, 520-562-2234
- Steve Brittle, CAP, 602-268-6110
- Barbara Knox, CAP, 602-963-3802
- Jim Lemmon, CAP, 602-941-5517
- Dave Matusow, CAP, 602-899-9425

Information Sources

The information sources used to develop this progress report include: 1) discussions during a teleconference among representatives of the U.S. Environmental Protection Agency, Intel Corporation, Arizona Department of Environmental Quality, Maricopa County, City of Chandler, and local residents serving on the Intel Community Advisory Panel; 2) the Final Project Agreement for the Intel XL project; and 3) annual and quarterly status reports prepared by Intel Corporation. The information sources are current through December, 1998.

Glossary

Carbon monoxide (CO): CO is defined in Section 302, Subsection W of the United States CAA, as carbon monoxide. This is a combustion emission produced when fossil fuel is burned (oxidized) incompletely.

Clean Air Act (CAA): This act is the comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. It authorizes EPA to establish nationwide air quality standards, which are required to be achieved in all parts of the country. The National Ambient Air Quality Standards (NAAQS) establish the maximum concentration for specific pollutants that may be present in the ambient air. States are required to draw up plans to achieve the Federal standards within their borders.

Clean Water Act (CWA): This act establishes a number of initiatives designed to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." (33 United States Code, Section 251(a)). The CWA makes it unlawful for any person to discharge any pollutant into navigable waters unless done in compliance with the Act. Under the Act, EPA and the states have established effluent standards on an industry basis, and a permitting program to regulate the discharge of pollutants to the nations waters, among other things.

Community Advisory Panel (CAP): An advisory group consisting of area residents.

Hazardous air pollutants (HAPs): Air pollutants that are not covered by National Ambient Air Quality Standards but that may present a threat of adverse human health effects or adverse environmental effects. Such pollutants include methanol, xylene, ethylene glycol, hydrofluoric acid, chlorine, hydrochloric acid, and phosphine.

Hazardous waste recycle: Materials that are specifically designated as hazardous waste under EPA's Resource Conservation and Recovery Act (RCRA) regulations. The percentage recycled is calculated by dividing the quantity of hazardous waste sent off for beneficial recycle and energy recovery by the total quantity of hazardous waste generated and shipped offsite.

National Ambient Air Quality Standards (NAAQS): Maximum concentration of a pollutant that may be present in the ambient air in all parts of the country, under the CAA. EPA is responsible for establishing these standards, and states are required to draw up plans to achieve the Federal standards within their borders.

Nitrogen oxide (NOx): An air pollutant that is the result of photochemical reactions of nitric oxide in ambient air. Typically, it is a product of combustion from transportation and stationary sources. It is a major contributor to the formation of ozone in the troposphere, photochemical smog, and acid deposition.

Nonattainment area: An area of the country in which the primary NAAQS are not met. Special provisions of the CAA apply to these areas. Primary standards are designed to protect the public health with an adequate margin of safety.

Nonhazardous chemical waste recycle: Used chemical materials which are collected for the purpose of returning them into beneficial reuse. They are classified as nonhazardous based upon EPA's definition set forth under RCRA. The percentage recycled is calculated by dividing the amount of material in this category by the total quantity of waste generated.

Particulate matter (PM10): Airborne particulate matter with an aerodynamic diameter less than or equal to 10 microns as defined in regulations promulgated pursuant to the CAA (40 Code of Federal Regulations 51.100(qq)).

Plant site emissions limits (PSELs): The air quality permit establishes PSELs in tons per year for emissions of the following: VOCs, NOx, CO, PM10, SO_2, combined organic HAPs, combined inorganic HAPs, sulfuric acid, and phosphine.

Pollution Prevention Act (PPA): This 1990 law was passed to reduce or eliminate industrial pollutants through technology transfer, education, and public awareness. The programs developed under the PPA are administered by EPA's Office of Prevention, Pesticides, and Toxic Substances.

Production unit factor (PUF): A standardized unit of production activity against which to measure emissions. The ratio of tons of emissions of HAPs and VOCs to the PUF is used as an indicator of whether emissions are increasing or decreasing in relation to production activity. The PUF was developed for the Ocotillo plant in December 1996 to incorporate both semiconductor complexity and volume of raw material (silicon) processed. The PUF is calculated as feature size/square inches of silicon processed. Feature size is the width of the smallest transistor, and is an indicator of process and product complexity. For all of 1997, the feature size was 0.35 microns. For all of 1997, the first year under the FPA, the ratio of tons to PUFs was $1.28E^{-06}$ for VOCs, and $9.40E^{-08}$ for HAPs. Future annual reports will include similar ratios that may be compared to this baseline.

Resource Conservation and Recovery Act (RCRA): RCRA gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of nonhazardous waste. RCRA enables EPA to address environmental problems that could result from underground storage tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned sites.

Solid waste recycle: Includes materials designated under RCRA as nonhazardous waste such as paper, plastics, aluminum, glass, and wood. The percentage recycled is calculated by dividing the quantity of materials within this category that are sent to beneficial recycle by the total volume of solid waste shipped offsite.

Sulfur dioxide (SO_2): SO_2 gases are formed when fuel containing sulfur (mainly coal and oil) is burned during metal smelting and other industrial processes. SO_2 is associated with acidification of lakes and streams, accelerated corrosion of buildings and monuments, reduced visibility, and adverse health effects, including effects on breathing, respiratory illness, and aggravation of existing cardiovascular disease.

Volatile organic compound (VOC): Any organic compound that easily evaporates and participates in atmospheric photochemical reactions except those designated by EPA as having negligible photochemical reactivity.

Wastewater: The spent or used water from a home, community, fam, or industry that contains dissolved or suspended matter.