

Editors Note:

We have made slight changes to some information in this (2nd) edition of the 2000 report card. (see executive summary and pages 3-4 of the report).

Introduction

The Silicon Valley Toxics Coalition (SVTC) is issuing its 2nd annual **Environmental Report Card**, which assesses the quantity and quality of environmental information provided by high-tech companies on their websites. SVTC undertook this task to determine if 44 companies that produce either consumer electronics -- computers, computer peripherals or computer components (semiconductor chips, hard disk drives, etc) -- have improved their environmental reporting to the public via electronic means. Due to the large number of computer companies included, we did not include telecom companies in this report, although next year's report may include telecom and internet companies. At the same time, SVTC further developed its own analytical tools and refined the survey for this 2nd annual report.

I. Background

The annual Environmental Report Cards are issued as a part of the Clean Computer Campaign, which is one of SVTC's activities within the International Campaign for Responsible Technology (ICRT). The ICRT is an international SVTC-initiated network that focuses on the community, worker and environmental health impacts of high-tech development throughout the world. The Clean Computer Campaign's mission is to promote clean production, sustainability and accountability in the high-tech industry.

Silicon Valley Toxics Coalition monitors the high-tech industry because it is the largest and fastest expanding manufacturing industry in the world. The high-tech industries that produce vast quantities of consumer electronic products also consumes great amounts of natural and human resources and has enormous environmental and health consequences. These global companies also have enormous financial, technological and intellectual resources at hand. SVTC believes that the electronics industry has both the resources and the responsibility to reduce its use of toxics and natural resources as well as to implement sustainable manufacturing and design for the environment.

II. Gathering environmental data

Effective environmental reporting is an important element of corporate responsibility. One way that companies can demonstrate this responsibility is by communicating clear, accurate and comprehensive environmental information to the public – especially through electronic media. The companies that thoroughly and quantifiably report information on their environmental programs and make this information readily accessible over the Internet should be recognized, and those that do not should be challenged to improve.

Benchmark criteria: SVTC has identified 9 essential benchmarks to use in assessing corporate environmental sustainability: Product Stewardship, Hazardous and toxic chemicals, Water, Energy, Suppliers/subcontractors, Occupational Health, International Operations and Ease of accessing the above information.

See Appendix B starting on page 23 for a list of all the criteria used.

The companies: Forty- four U.S., Japanese, European and Korean companies' websites were analyzed:

The American Companies. The twenty-two (22) U.S. companies included: Agilent, Advanced Micro Devices, Apple Computer, Applied Materials, Compaq, Dell, Flextronics, Harris, Hewlett-Packard, IBM, Intel, Komag, Lucent, Maxtor, Motorola, National Semiconductor, Quantum, Seagate, Silicon Graphics, Solectron, Sun Microsystems, Texas Instruments.

The Japanese Companies. The fourteen (14) Japanese companies included: Canon, Epson, Fujitsu, Hitachi, Kyocera, Matsushita/Panasonic, Mitsubishi, NEC, Oki, Sanyo, Sharp, Sony, Sumitomo Electric, Toshiba. The analysis included both Japanese language and English-language websites for these companies.

The European Companies. The three (3) European companies included: Philips, Siemens and ST Microelectronics.

The Korean Companies. The five (5) Korean companies included: Daewoo, Hyundai, Lucky Goldstar (LG Group) Samsung and SK Electronics.

For the methodology used in the evaluation, see Appendix C on page 25.

III. Results

The Leaders and Laggards Overall

The highest possible score is 87 points. (28 questions x 3 (highest score + assessment on ease of finding the site) = 87 points). The scores ranged from 0 – 55.

The scores for the Japanese companies (for both the websites in Japanese and English languages) show that their scores are significantly higher than those of the American, European and Korean companies. The Japanese language sites scored the highest, but even the English language sites for the Japanese companies scored higher than many of the other companies.

The rankings:

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THE CANDY CANE GANG

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1. Canon (J)	55 (63.2 % of total)
2. IBM (USA)	51 (58.6% of total)
2. NEC (J)	51 (58.6% of total)
3. Mitsubishi (J)	46 (52.9% of total)
4. Sony (J)	45 (51.7%)
5. Fujitsu (J)	43 (49.4%)
6. Toshiba (J)	42 (48.3%)
7. Matsushita (J)	41 (47.1%)
7. Sharp (J)	41 (47.1%)
8. ST Microelectronics (E)	39 (44.8%)

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THE MIDLERS

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9. Motorola (USA)	35 (40.2%)
10. Phillips (E)	34 (39.1%)
10. Hewlett-Packard (USA)	34 (39.1%)
10. Sanyo (J)	34 (39.1%)
11. Hitachi (J)	32 (36.8%)
12. Apple (USA)	31 (35.6%)
12. Compaq (USA)	31 (35.6%)
13. Intel (USA)	30 (34.5%)
14. Epson (J)	27 (31.0%)

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15. Siemens (E)	25 (28.7%)
15. Oki (J)	25 (28.7%)
16. AMD (USA)	23 (26.4%)
16. Texas Instruments (USA)	23 (26.4%)
17. Sun Microsystems (USA)	20 (23.0%)
18. Dell (USA)	19 (21.8%)

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19. Lucent (USA)	16 (18.4%)
19. Samsung (K)	16 (18.4%)
20. National (USA)	14 (16.1%)

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21. Kyocera (J)	9 (10.3%)
21. Komag (USA)	9 (10.3%)
21. Quantum (USA)	9 (10.3%)
22. Agilent (USA)	7 (8.1%)
23. Sumitomo Electric (J)	4 (4.6%)
24. Solectron (IUSA)	3 (3.4%)
25. Harris (USA)	2 (2.3%)
26. Flextronics (USA)	1 (1.1%)

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CELLAR DWELLERS

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34. Applied Materials (USA)	0
34. Maxtor (USA)	0
34. Seagate (USA)	0
34. Silicon Graphics (USA)	0
34. Daewoo (K)	0
34. Hyundai (K)	0
34.LG Goldstar (K)	0
34. SK Electronics (K)	0

The Leaders and Laggards per category

OVERALL SCORES

Out of 87 possible points, only 5 companies, 4 Japanese and 1 US company scored over 50%. They are noted below as well as the cellar dwellers who received 0 points.

PRODUCT STEWARDSHIP – 8 questions – 24 possible points

Criteria used: programs using Life Cycle Assessment or Design for the Environment to reduce environmental impact; a take-back or end-of product life program; reporting the amount of material recovered or recycled through the take-back program; contact information for consumers to contact the take-back program; reporting if manufactured products are made from recycled materials; reporting about improvements to facilitate product recycling; reporting about product up-grade; report about use or reduction of PVC plastics.

Product Stewardship – top scorers

- 6 Japanese companies (Fujitsu 18; Canon 16; Mitsubishi 16; NEC 16; Hitachi 15; Matsushita 13)
- 3 American companies (Hewlett-Packard 17; Apple 15; IBM 13)

Product Stewardship – cellar dwellers – 0 points

- 5 American companies (AMD, Applied Materials, Maxtor, Seagate and Silicon Graphics)
- 4 Korean companies (Daewoo, Hyundai, LG and SK Electronics)

REALITY CHECK--> 23% of US and 80% of Korean companies received a score a 0.

WATER – 5 questions – 15 possible points

Criteria used: water use; water discharge, water re-use and recycling; quantifying water re-use and recycling; quantifying goals for increased water efficiency.

Water – top scorers

- 2 Japanese companies (Canon and NEC-10 points each)
- 2 European companies (Philips and ST Microelectronics each received 10 points)
- Out of possible 15 points, none of the top scoring 4 companies are US companies.

Water – cellar dwellers – 0 points

- 10 American companies (Agilent, Applied Materials, Dell, Flextronics, Harris, Hewlett-Packard, Lucent, Maxtor, Seagate and Silicon Graphics)
- 3 Japanese companies (Epson, Sanyo and Sumitomo Electric)
- 4 Korean companies (Daewoo, Hyundai, LG and SK Electronic)

REALITY CHECK--> 46% of US, 21% of Japanese and 80% of Korean companies received a score a 0.

ENERGY – 4 questions – 12 points

Criteria used: steps taken to improve energy efficiency of the product; reporting energy used in manufacturing; reporting energy used in product use; and reporting goals for reducing energy use and/or increasing energy efficiency in the production of the product.

Energy – top scorers

- 11 Japanese companies (Canon 12; Mitsubishi 12; Sony 12; Matsushita 11; Sharp 11; NEC 10; Toshiba 10; Sanyo 8; Fujitsu 8; Epson 7; Hitachi 6)
- 3 European companies (Philips 9; Siemens 8; ST Microelectronics 8)
- 2 American companies (IBM 11; Apple 6)
- 3 Japanese companies, Canon, Mitsubishi and Sony had perfect scores. 11 of the 14 Japanese companies scored in the top 50%.
- All 3 European companies scored in the top 50%.

Energy – cellar dwellers – 0 points

- 11 American companies (Agilent, Applied Materials, Flextronics, Harris, Komag, Maxtor, National, Quantum, Seagate, Silicon Graphics and Solectron)
- 4 Korean companies (Daewoo, Hyundai, LG and SK Electronics)

REALITY CHECK--> 50% of US and 80% of Korean companies received a score a 0.

HAZARDOUS/TOXIC CHEMICALS – 4 questions – 12 possible points

Criteria used: specific amounts of chemicals used and the processes they are used in; reporting comprehensive information about the amount and type of hazardous waste generated by the facility (both TRI/SARA and non TRI/SARA); information on company's toxic use reduction program or efforts to find non-toxic, non-hazardous substitute materials; and reporting on Superfund or other contaminated sites.

Hazardous/toxic chemicals – top scorers

- 10 Japanese companies (Toshiba 10; Epson 8; Fujitsu 8; Matsushita/Panasonic 7; NEC 7; Oki 7; Sony 7; Canon 6; Mitsubishi 6; Sanyo 6)
- 3 American companies (Compaq 7; IBM 7; Intel 7)
- 1 Korean company (Samsung 6)
- 3 Japanese companies had the highest scores.

Hazardous/toxic chemicals – cellar dwellers – 0 points

- 7 American companies (Applied Materials, Flextronics, Harris, Maxtor, Seagate, Silicon Graphics and Solectron)
- 4 Korean companies (Daewoo, Hyundai, LG and SK Electronics)

REALITY CHECK--> 32% of US companies and 80% of Korean companies received a score a 0.

SUPPLIERS – 2 questions – 6 possible points

Criteria used: does the company use environmental performance in their criteria for supplier/subcontractors when purchasing, hiring or subcontracting; and report on how they monitor supplier's environmental policy.

Suppliers – top scorers

- 7 American companies (Hewlett-Packard 5; IBM 4; AMD 3 ; Dell 3; Intel 3; Motorola 3; Texas Instruments 3)
- 1 Japanese company (Sanyo 5)

- Out of a total of 6 points Hewlett-Packard and Sanyo both received five points.

Suppliers – cellar dwellers – 0 points

- 9 American companies (Applied Materials, Flextronics, Harris, Komag, Maxtor, Quantum, Seagate, Silicon Graphics and Solectron)
- 7 Japanese companies (Epson, Hitachi, Kyocera, Mitsubishi, Oki, Sumitomo Electric and Toshiba)
- 5 Korean companies (Daewoo, Hyundai, LG, Samsung and SK electronics)
- 1 European company (Siemens)

REALITY CHECK-->41% of US, 50% of Japanese, 100% of Korean and 30% of European received a score a 0.

OCCUPATIONAL HEALTH – 2 questions – 6 possible points

Criteria used: quantifiable information about job illnesses as distinct from injuries in the workplace; and how the company monitors chronic health effects in the workforce and/or local community.

Occupational health – top scorers

No company received at least 50% (3 points). The following 10 companies received 2 points each.

- 8 American companies (AMD, Compaq, IBM, Intel, Lucent, Motorola, National Semiconductor, and TI)
- 2 Japanese companies (Sony and NEC)

Occupational health – cellar dwellers – 0 points

- 10 American companies (Applied Materials, Dell, Flextronics, Harris, Komag, Maxtor, Quantum, Seagate, Silicon Graphics and Solectron)
- 10 Japanese companies (Epson, Fujitsu, Hitachi, Kyocera, Matsushita/Panasonic, Mitsubishi, Oki, Sanyo, Sumitomo Electric, and Toshiba)
- 3 European companies (Philips, Siemens and ST Microelectronics)
- 4 Korean companies (Daewoo, Hyundai, LG and SK Electronics)
- More than half (27) of the companies surveyed scored 0 (meaning they did not have information on occupational health) on their web sites.

REALITY CHECK-->45% of US, 71% of Japanese, 100% of European and 80% of Korean companies received a score a 0.

INTERNATIONAL STANDARDS – 3 questions – 9 possible points

Criteria used: reporting and identifying foreign and domestic subcontractors that provide chemical production, transportation or component manufacturing; reporting of its policies and practices with international subcontractors; and reporting if the same standards/protocols are used in domestic operations are applied to international operations.

International – top scorers

- 1 Japanese company (Canon 6)
- 1 American company (IBM 5)
- Canon, a Japanese company was the top scoring company.

International – cellar dwellers – 0 points

- 11 American companies (Agilent, Applied Materials, Flextronics, Harris, Komag, Maxtor, Seagate, Silicon Graphics, Solectron, Sun Microsystems and TI)
- 3 Japanese companies (Epson, Kyocera, Sumitomo Electric)
- 2 European companies (Philips and Siemens)
- 4 Korean companies (Daewoo, Hyundai, LG and SK Electronics)

REALITY CHECK--> 50% of US, 2% of Japanese, 66% of European and 80% of Korean companies received a score a 0.

INFORMATIONAL ACCESSIBILITY – 1 question – 3 possible points

Criteria used: The question asked was, simply, how easily accessible is environmental information on this website? Without easy access for the public, the relevant information is worthless; therefore this is the most important category.

A different scoring system was used:

- Score 0** Took more than five minutes to find information
- Score 1:** Need to use many other keywords than those identified
- Score2:** Can access environmental information using the keywords “environmental report” or “environmental health and safety” or “environmental health”
- Score3:** Link to environmental report or department on homepage

Our operating assumption is that each company should have a link to its environmental department on its homepage.

Informational accessibility – top scorers – Score of 3

- 2 Japanese companies (Canon and Mitsubishi) (15% of Japanese firms)
- 1 European company (ST Microelectronics) (30% of European firms)
- 1 American company (Agilent) (4.5% of U.S. firms)

Informational accessibility – the middle ranks – needs improvement score of 2

- 8 US companies (Apple, Hewlett-Packard, IBM, Intel, Komag, Motorola, Quantum, Sun Microsystems)
- 1 European company (Siemens)

REALITY CHECK-->36% of US, 30% of European companies scored a 2.

Informational accessibility– needs major improvement score of 1

- 8 US companies (Advanced Micro Devices, Compaq, Dell, Harris, Lucent, National, Solectron, Texas Instruments)
- 12 Japanese companies (Epson, Fujitsu, Hitachi, Kyocera, Matsushita, NEC, Oki, Sanyo, Sharp, Sony, Sumitomo Electric, Toshiba)
- 1 European company (Philips)
- 1 Korean company (Samsung)

REALITY CHECK-->41% of US, 86% Japanese, 30% of European and 20% of Korean companies scored a 1.

Informational accessibility – cellar dwellers – 0 points

- 5 US companies (Applied Materials, Flextronics, Maxtor, Seagate, Silicon Graphics)
- 4 Korean companies (Daewoo, Hyundai, Lucky Goldstar, SK Electronics)

The majority of the lower scoring companies consisted of subcontractors and suppliers as opposed to the name brand companies, which tended to be the higher scorers. This is a consistent trend in most of the other categories.

REALITY CHECK--> 23% of US and 80% of Korean companies received a score a 0.

IV. Discussions and Findings

Several clear trends appear in the data:

- Japanese companies are among the top scoring groups in every category, except Occupational Health and Suppliers
- Japanese companies appear more often than American companies in the top scoring groups of following categories: Product Stewardship, Energy and Hazardous Materials and tend to score much lower in the Suppliers and Occupational Health categories.
- American companies have displayed just the opposite trend. They tended to score higher in the Suppliers and Occupational Health categories and lower in every other category.
- European companies are scattered, mostly in the mid and high ranges.
- Korean companies score the worst in every category.

CONTRACTORS AND SUPPLIERS

It is extremely important to promote detailed reporting on international manufacturing in order to reduce and prevent the globalization of pollution to the third world. Too often, electronics manufacturing firms export hazardous technologies and hazardous waste and do not pay enough attention to the negative impacts on the environment and on workers health in developing countries. Full disclosure of environmental and health impacts includes the identification of major suppliers and subcontractors so that the public has the necessary information to make informed decisions about which brands they choose to support with their consumer purchases. This is increasingly true, as major “name brand” electronics manufacturers rely more and more on unknown sub-contractors.

Generally, sub-contractors and suppliers of computer components (such as Maxtor, Seagate, Solectron and Flextronics) scored much lower than the name brand companies such as (Hewlett-Packard, IBM and Canon). A possible explanation for this is that name brand companies – which employ these suppliers and contractors -- do not demand adherence to strict environmental or worker health standards from their contractors. Also, the public, which consists of individual consumers as well as NGOs, has not pressured the subcontractors to improve their environmental performance.

Hewlett-Packard is the only company evaluated that is making strides towards full disclosure. They publish their “Supplier

Environmental Performance Review Questionnaire” on their website, and although they do not publish supplier names, it is a step in the right direction and should be commended. We will continue to work with H-P and other Original Equipment Manufacturers (OEMs) to improve their oversight of their sub-contractors.

GREENWASHING

Greenwashing is the practice of using non-specific language as well as graphs and tables with missing or confused units, which results in the appearance of “greener” and safer behavior than is true in practice. Many companies boast about their efforts for -- and contributions to -- a cleaner and safer environment, but make no mention of their past and present contributions to contamination and pollution, that is, the negative environmental impacts.

Examples of greenwashing include:

- the most obvious form is empty statements referring to caring or efforts being made in some process without providing any specifics
- using a number/ 100 workers without stating the total number of workers at the facility
- using percentages without disclosing the number that the percentages are referencing
- specifically in the occupational health category – the combination of injuries and illnesses as a unit. This does not provide information on either category specifically. The electronic industry data reflects a relatively low injury rate, but major concerns are mounting as evidence continues to grow that illness rates are high. The industry's reliance on chemicals has been linked to clusters of cancers (breast, reproductive and brain); miscarriages, and birth defects among workers exposed to these chemicals. By combining injury with illness data, the concerns about occupational illness are hidden.

The following are specific examples from websites:

- “[We] participate in efforts in improve environmental protection and understanding around the world and share appropriate pollution prevention technology, knowledge and methods.” (IBM, Environmental Affairs Corporate Policy)
- “Kyocera is promoting waste reduction by reviewing manufacturing process, recycling and decontamination of wastes.”

(Kyocera's answer to the question "What has Kyocera done to protect the environment?" on their website)

- "Intel believes that the best way to promote excellent supplier performance is to select the best suppliers available and then work cooperatively on systemic improvements. For that reason, when at an Intel site, our suppliers are expected to comply with all laws and regulations regarding environment, health and safety, as well as Intel EHS policies, procedures and guidelines"
(Intel, Management Performance section of the Environmental Report)

DOUBLE – STANDARDS

It became crystal clear while conducting this survey that many companies have differing standards for environmental responsibility in Europe and Asia when compared to the United States and the third world.

- Apple has a product take-back in program in Germany but not in the US ("Environmental Attributes of the Power Macintosh G4", www.apple.com/powermac/specs.html)
- Dell has product take-back programs in Germany, Sweden, Norway, the Netherlands and Taiwan (p. 9, "Dells Environmental Policy")
- "IBM began offering take-back programs in 1989 in Europe and continues to expand and enhance these offerings. Currently, there are 14 such programs in Europe, South Africa and Asia, but IBM just began a national take-back program in the United States. (www.ibm.com/ibm/environment/annual99/produce.html; "Product End of Life Management" section)

The main reason that global electronics companies are performing so much better in Europe and Japan is that more stringent legislation is already in place, and more regulations are scheduled to take effect in the near future. The U.S. based companies, while complying with the laws elsewhere, take the position that in the U.S. a "voluntary" approach is preferable to a "regulatory" approach. The result is that the U.S. is falling further behind. To make it worse, U.S. companies have been actively lobbying against legislative initiatives in Europe and are threatening to instigate legal action in the WTO. See <http://www.svtc.org/cleancc/index.html> for further information.

Examples:

- HP conducts packaging takeback in the following countries:

Austria, Belgium, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK.

(www.hp.com/abouthp/environment/contents/packagin/packag_a.html
“Minimizing Packing” section)

- “Compaq utilizes many different product take back programs around the world dependent on regional legislation, customer demand, take back capabilities and infrastructure”

(www.compaq.com/corporate/ehss/2000rpt/products.html)

GREAT LEAPS FORWARD

Several companies have made significant improvements in specific areas:

- Matsushita/Panasonic uses lead-free solder in a portable (mini-disk) MD player. The solder contains tin, silver and bismuth and the company claims that the solder has the same temperature and agglutinating qualities as lead solder. (p.12, Environmental Report)

- They also produce halogen-free circuit boards and PVC-free wiring (p.12, Environmental Report)

- Fujitsu has also made commitments to clear lead reduction goals
“ Starting October 2000, the entire LSI products will be made lead-free”
“Starting December 2001, lead-free solder will be adopted for ½ of the entire printed circuit board production.”

“Starting December 2002, the complete elimination of lead will be targeted.”

(http://fujitsu.co.jp/hypertext/About_fujitsu/environment/eco_20000321_e.html)

- IBM’s Intellistation E-Pro is made with 100% recycled plastic resin.
(<http://www.ibm.com/Press/prnews.nsf/jan/D0C6404515752B6E85256727004E924F>)

If these leadership companies can eliminate lead and halogens in their products, why aren’t other companies using these technologies?

RIGHT TO KNOW

When the Toxics Release Inventory (TRI) was enacted in 1986 by the U.S. Congress, SVTC was the first group in the nation to obtain, analyze and publish a report documenting the toxic emissions in a local area. The report sent shock waves throughout Silicon Valley and subsequent publicity reached other high-tech areas throughout the country and around the world. While TRI was an important initial step,

critical information regarding chemical usage was not included in the requirements. Subsequent efforts in the U.S. by NGOs to include chemical usage requirements have been unsuccessful.

Pollution Release and Transfer Registry (PRTR) is an international effort that takes TRI a step further. Most Japanese companies and Samsung (a Korean company) are providing information about the amounts of chemicals used, released to air, water and land and the amount recycled for chemicals chosen from a list of 179 substances. The PRTR regulation will be enacted in Japan in 2001. Because of this legislative pressure, many Japanese companies now report extensively on their toxic chemical usage and releases and have taken over the lead globally in this category.

This varies significantly from American and European companies which have much more limited information or no such disclosures. With few exceptions, most American, European and Korean companies do not provide specific information on chemical usage, release or recycling.

Comparison with last year's results

Since this year's criteria and the list of companies included are significantly expanded from last year's, the ability to compare company performance is limited.

- With the addition of more Japanese and European companies in the assessment, the U.S. companies relative rank has dropped.
- While Apple and IBM are again among the higher scorers this year, they are also joined by Matsushita/Panasonic and Sharp, which were much lower in the rankings last year.
- Its no surprise that Korean companies have not moved from the lowest ranks status (Daewoo and Samsung were the only analyzed in both years). They are also joined by Hitachi, which is also among the lower ranks for both years.
- NEC, Toshiba, Sony, Compaq, Dell, and Hewlett-Packard's status has not changed, as all are still within the middle ranks.

CONCLUSIONS

One of the main challenges identified in this report is the freedom of choice – or rather the lack thereof. American consumers lack the freedom and the ability to choose which products best suit their environmental criteria because they lack essential environmental and health information.

- Double standards exist in many areas of the consumer electronics sector of the economy. The entire industry is still far from the goal of operating safely and being transparent when it comes to information on environmental processes and policies.
- Due to stringent legislation in Europe and Japan, many U.S. companies are doing a better environmental job in those countries than they are doing at home.
- Many Japanese companies provide information in a more coherent and transparent manner than U.S. or European companies.
- Many Japanese companies out-perform U.S. high-tech companies in the environmental reporting arena.
- While some U.S. companies did outperform Japanese companies reporting on the issues concerning Suppliers and Occupational Health, most of these companies did not perform very well overall.
- Information supplied by many companies to the public is marginal at best, utilizing missing or confused units. Another major problem is greenwashing. This is a more prevalent problem among American companies.
- Where take-back exists, corporate customers have greater access to take-back than individual customers. Computers at large businesses are replaced faster and therefore have higher resale value. This does little to solve the e-waste issue which contains a high percentage of electronic waste from individual homes.

Suppliers are generally less concerned about their public image than the name brand companies and, therefore, are not doing as good a job disclosing environmental information. Since the amount of manufacturing being done by sub-contractors is increasing significantly on a global scale, it is imperative that better environmental information – as well as better environmental performance – increases dramatically.

Much remains to be done !!!!!

RECOMMENDATIONS

For consumers:

- ◆ Consumers need and deserve much better information on the environmental and health impacts of consumer electronic products.
- ◆ Consumers should buy only “necessary” consumer electronics products and reward “greener” companies with their consumer dollars and punish the “cellar dwellers” by not buying their products. If possible, purchase the products that utilize some of the emerging technologies (i.e.: lead-free solder, halogen-free wiring and recycled plastics).
- ◆ Consumers can contact companies directly by sending a letter stating your dissatisfaction with the current state of affairs. Examples of such letters and email addresses for many companies can be found at http://www.svtc.org/cleancc/4ht_letters.htm.
- ◆ If you know of anybody who needs to dispose of old computer equipment after the holiday season, direct them to SVTC’s **Computer Reuse and Recycling Maps of the San Francisco Bay Area** to get a listing of options to get rid of used and outdated equipment. See www.svtc.org/cleancc/recycle/index.html for further information.
- ◆ If you don’t live in the San Francisco Bay Area, contact the International Association of Electronics Recyclers at <http://www.iaer.org/search/>. This site has nationwide information on computer recycling organizations. Also, contact local environmental groups and government agencies to put together a more comprehensive local directory and recycling map in your area. http://www.basic.org/Projects/comp_recycling/bayarea/index.html

For high-tech companies:

- ◆ Major name brand manufacturers (OEMs) should include clear and concise disclosures about their suppliers and subcontractors (i.e.: a list of all subcontractors in all countries who do over a certain percentage of business)
- ◆ All companies should include clear and concise disclosures on the identity and amounts of chemicals used, released, treated and disposed (similar to the Japanese PRTR)
- ◆ All companies should include clear and concise disclosures on the processes that these chemicals are used in.
- ◆ All companies should include clear and concise disclosures on all global company locations
- ◆ All companies should have the environmental report link on the home page of the website.

For governments:

- ◆ Learn from your counterparts in Europe and Japan and pass laws to establish Extended Producer Responsibility and take back
- ◆ Phase out the most toxic, persistent and bioaccumulative chemicals
- ◆ Pass effective rules for water and energy conservation
- ◆ Require reporting of toxic chemical use as well as releases
- ◆ Get serious about improved occupational health reporting, especially for cancer, birth defects, and other chronic diseases related to toxic chemical exposures on the job

Appendix A

Following are the general findings, characteristics and other notable points contained in the individual company's websites:

Companies with Headquarters in the United States

- ◆ Product information mostly concerns energy efficiency and whether the product contains materials that are recyclable.
- ◆ Regarding conservation and reduction of energy, water and waste, only the amounts of recycle/reuse or reduction – mostly percentages – are given, but the specific amounts of materials used or discharged are not stated.
- ◆ There is sufficient information on injuries, accidents and ergonomics in the websites, but virtually no information about chronic health effects in the workforce/community.
- ◆ Most companies have extensive information on toner cartridge and package recycling, but not on hardware and appliances.

AMD has information on its international manufacturing sites. Its website does not have an independent EHS section.

Apple provides detailed information about their product development in terms of environmental attributes. They do not have information on their own product take-back program. The website refers to other recycling firms, government programs and donation as outlets for obsolete material. Take-back does occur in Europe as stated in the report on environmental attributes of their products. Very little statistical information for materials use/emission/conservation was included in their website.

Compaq did not differentiate between different waste streams (i.e. solid, chemical, wastewater). The report shows that in the U.S. and Europe, manufacturing sites (Houston and Scotland) have reduced waste generation, whereas in its Asian site (Singapore) waste generation is increasing.

Dell did not have established EHS pages in any country except Japan. Dell's annual environmental report in English can be downloaded only from the Japan site. Although its U.S. site had the information on the

product take-back and asset recovery program, customers are limited to large corporate customers.

Harris' environmental information remained a vague and general statement of their effort to protect the environment, and the health and safety of employees.

Hewlett-Packard 's website contains the entire "Supplier Environmental Performance Review Questionnaire" and "Environmental Activity Guide" questionnaires for suppliers. The amounts for water, chemicals and energy used or wastewater and hazardous waste generated was not specified clearly.

IBM's website covers the company's environmental contributions thoroughly, and that the descriptions are clear and easy enough for the layperson to understand. Many of the statistical reports provide the information based on each facility/sub-contractor. It is one of the few websites that specify both the names and amounts of SARA chemicals used in the corporation. The site downplays the fact that many of its workers are suing the company for occupational illnesses.

Intel also reports the types and specific amounts of SARA hazardous wastes in detail.

Komag comments on its environmental contributions, especially its various recycling programs, but the programs appear to be mainly for solid wastes generated in manufacturing processes.

Lucent's website covers a relatively wide range of subjects, but the information is fragmented. The reports on material use, conservation and generation are based only on percentage reductions.

Motorola has substantial information on its domestic operations, but does not have much information on its international operations.

National Semiconductor explains their efforts, policies and objectives in environmental activities, but lacks specific data and statistics.

Quantum has few statements about its EHS policy, product design, workers' health and safety, CFCs and ozone.

Solectron has no information regarding the environment.

Sun Microsystems offers the performance and measurement of each subject separately. Statistics are not detailed, specific numbers or amounts are not provided. The interpretations of graphs and tables are not accurate. This site has declined from its leadership position of a few years ago.

Texas Instruments has its own EHS homepage, which deals with wide range of subjects, but no information regarding international operations was found.

Applied Materials, Seagate and **Silicon Graphics** have pages that mention the environment, but remain at only a few sentences.

Companies with Headquarters in Japan

- ◆ Many Japanese corporations report that they have environmental activities overseas, but not in specific detail. The reporting on operations in Japan is very detailed, but the reporting on their activities in other countries is not.
- ◆ Many companies emphasize the development of energy efficient products and product recyclability, but do not state clearly if their products contain recycled materials.
- ◆ Japanese companies usually published their Japanese environmental report for year 2000 earlier than English versions, and the Japanese language sites are more comprehensive than the English language related sites.

Canon's language use is clear and easy to understand for the general public. The headlines on each page give the readers clear information about what is contained in that page. Their Japanese website is more extensive than their English language one.

Epson focuses mainly on the energy efficiency of their products, but does not have much information about environmental aspects of their manufacturing.

Fujitsu has extensive reporting on product stewardship and hazardous/toxic chemicals, but lacks information on suppliers,

occupational health and international standards. Their annual environmental report had the most pages out of fourteen Japanese companies.

Hitachi's English website was not developed, with only three pages briefly explaining the Environmental Management System and their operating system.

Kyocera had the least amount of environmental information among all the Japanese corporations.

Mitsubishi has extensive data about chemical and hazardous waste. The data sheet contains the types of chemicals they use, the amounts used, discharged, consumed, recycled and landfilled.

N.E.C. set their goals regarding environmental activities in a detailed manner: they developed 3 major categories (i.e., product stewardship, manufacturing, and international operations). They report on their overseas subcontractors and affiliates in each section. Also, they have specific contact information (telephone numbers and web addresses) on each page. Each of their affiliated sites in Japan has its own environmental annual report.

Sanyo does not include environmental issues in their English website. In the Japanese site, an extension of global network of environmental activities was emphasized.

Sharp focuses on energy reduction and efficiency. They do not have complete data on material use at any of the manufacturing sites and offices.

Sony has one of the most detailed and the clearest description about their environmental activities. The information is customer-oriented in that it explains technical terms clearly so that the public can understand easily. The public is asked for feedback in a form of a questionnaire and the result is on a webpage that is updated annually.

Sumitomo's environmental brochure had only a Japanese version, although its website had a brief overview of its activities in English.

Toshiba has information on hazardous/toxic chemicals and energy efficiency of their products. They explain the processes of recycling plastics and how the materials that constitute their products have high recyclability, but there is no mention if recycled materials are actually used.

Companies with Headquarters in Europe

- ◆ The environmental websites by European companies seem to be made more for general customers and users, rather than large corporation customers and suppliers.

Philips' '98 annual report has a developed section for "meta" reporting of the report (scopes of the report, descriptions of data collection and data control). This makes the report easy for readers to understand. Although expressed only in percentages, their targets and goals were better clarified than the other companies. In their statistical report, the definitions of the materials (i.e., chemicals, wastes, etc.), units of measurement and processes were very precise.

Siemens' description about product energy efficiency was clear and detailed. The Environmental Report brochure was not available on the Internet.

ST Microsystems has a well developed site that lists their past pollution and contamination, the locations, major problems, negative impacts on the environment, and actions that were taken as the remedies.

Companies with Headquarters in Korea

- ◆ Among the five Korean corporations, Samsung was the only company that has environmental information.

Samsung reported the amount of air, water and waste, but the amounts used, generated or reduced is not stated. The amount of air releases of chemicals (used or discharged) did not have units.

Appendix B

Questions for Website Analysis

Product Stewardship (8 questions)

1. Does the company's website describe a program using life cycle assessment or Design for the Environment to reduce environmental impact?
2. Does the website describe a product take-back or end of life program?
3. Does the website report the amount of material recovered and/or recycled through the take-back program?
4. Does the website have information about how customers can contact the take-back program?
5. Does the company manufacture products made out of recycled materials?
6. Does the company report about improvements to facilitate product recycling?
7. Does the company report about their product upgrade capabilities for extending the life of their product?
8. Is there any information about the use or reduction of plastics (PVCs)?

Water (5 questions)

1. Does the company report the amount of water used at their facilities or company wide?
2. Does the company report the amount of wastewater discharged at their facilities or company wide?
3. Does the company provide information on water reuse or recycling?
4. Does the company quantify the amount of water that is reused or recycled (in the same processes)?
5. Does the company quantify goals that exist for increased water efficiency or water reuse/recycling?

Hazardous and Toxic Chemicals (4 questions)

1. Does the company report specific amounts of chemicals they use and the processes they are used in?
2. Does the company provide comprehensive information about the amount and type of hazardous wastes being generated by the facility? (TRI/SARA or non-TRI/SARA)?

3. Does the company have a toxics use reduction program and/or is the company making efforts to find non-toxic, non-hazardous substitute materials?
4. Does the company report about the number of Superfund Sites or other contaminated sites that the company been designated a potential responsible party (PRP) or non-PRP?

Energy (4 questions)

1. Does the company report steps taken to improve the energy efficiency of their product?
2. Does the company report energy used in manufacturing?
3. Does the company report energy used in product use?
4. Does the company report goals for reducing energy use and/or increasing energy efficiency in production of their product?

Suppliers (2 questions)

1. Does the company include environmental performance in their criteria for suppliers and contractors when purchasing, hiring, or subcontracting?
2. Does the company report how they monitor or audit the supplier's environmental policy?

Occupational Health (2 questions)

1. Does the company quantifiable information about job illnesses/injuries in the workplace?
2. Does the company monitor chronic health effects in the workforce and/or local community?

International (3 questions)

1. Does the company report or identify foreign and domestic sub-contractors that provide chemical production, transportation or component manufacturing and assembly services?
2. Does the company report on its policies and practices (health protective standards, wages, working conditions) with regard to international subcontractors?
3. Does the company report whether the same standards and protocols (chemical inspections, industrial illness monitoring and reporting) are used in domestic operations applied to international operations?

Appendix C

Methodology Used in the Evaluation

The identical 28 criteria were used in reviewing all the websites (see Appendix B). A search of each company's website was conducted during August of 2000 using the internal search engine and keywords, which included: product stewardship, take-back, recycling, environmental, environmental health and safety, environmental report, water, energy, health and safety, suppliers and subcontractors. Each webpage of the Environmental Department or the Environmental Report (if available) and all other pages containing information on these benchmark criteria were carefully examined.

After we completed the initial analysis, we notified each company of its results in October 2000 and they were offered the opportunity to make additions, corrections and clarifications in their scores. Nine Japanese companies and three American companies responded to our evaluation and much of this feedback was incorporated into the final report.

A numerical score of 0 to 3 was given to each item according to the quality and quantity of information. The total scores by item, category, company and country were determined.

Score 0: No information. No mention about the item in the entire website, or unable to find.

Score 1: Very little information. Only a few words to a short paragraph, or fragmented information. No specific data, no graphs/tables.

Score 2: Moderate but incomplete information. Several paragraphs to a few pages. Providing specific data, but only in percentages. Graphs and tables are simple.

Score 3: Comprehensive information. The information are extensive -- up to several pages. Providing specific data given number and in specific units. Graphs and tables are clear and contain detailed information.

Although, the most preferable contact would be personnel in charge of webpage development for the environmental program, few companies provided specific names and contact information for such personnel on their website, therefore, contacts were made through the general email addresses that were available.

Appendix D

Company Websites

Appendix E

Bar Charts

Acknowledgements

SVTC intern Ai Kuwabara gathered the information for this report and conducted the first portion of analysis from July through mid-August 2000. SVTC staff (Executive Director Ted Smith, Communications Director Leslie Byster, and Research Associate Olga Meydbray) developed the methodology, reviewed the analysis and wrote portions of the report. Environmental staff from several of the firms surveyed contributed written and verbal feedback.

Additional Note:

We have made these changes based on the feedback we have received. Although the status of most companies has remained the same, NEC has been moved into the ranks of highest scoring Japanese companies.