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# Desktop Computer Displays:

# A Life-Cycle Assessment

## VOLUME 1

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# Acronyms & Abbreviations

| | |
|---|---|
| ABS | acrylonitrile-butadiene-styrene |
| AMLCD | active matrix liquid crystal display |
| AP | acidification potential |
| ATIP | Asian Technology Information Program |
| a:Si | amorphous silicon |
| BOD | biological oxygen demand |
| BOM | bill of materials |
| Bq | Bequerel |
| CAAA | Clean Air Act Amendments |
| CAS | Chemical Abstract Service |
| CCFL | cold cathode fluorescent lamp |
| CDP | Computer Display Project |
| CFC | chlorofluorocarbon |
| CFR | Code of Federal Regulations |
| CHEMS | Chemical Hazard Evaluation for Management Strategies |
| COD | chemical oxygen demand |
| $CO_2$ | carbon dioxide |
| CPU | central processing unit |
| CRT | cathode ray tube |
| CTSA | Cleaner Technologies Substitutes Assessment |
| CWA | Clean Water Act |
| D | density |
| DEAM | Database for Environmental Analysis and Management |
| DfE | Design for the Environment |
| DOE | Department of Energy |
| DQI | data quality indicator |
| EF | equivalency factor |
| EIA | Energy Information Administration |
| ELF | extremely low frequency |
| EIME | Environmental Information and Management Explorer |
| EMF | electric and magnetic field |
| EOL | end-of-life |
| EP | eutrophication potential / electroplating |
| EPA | Environmental Protection Agency |
| EU | European Union |
| Fe | iron |
| FGD | flue gas desulfurization |
| FPD | flat panel display |
| GWP | global warming potential |
| H | heat value |
| HAP | hazardous air pollutant |
| HC | hydrocarbon |
| HCFC | hydrochlorofluorocarbon |
| HDPE | high density polyethylene |

| | |
|---|---|
| HEAST | Health Effects Assessment Summary Tables |
| HF | hydrofluoric acid |
| HIPS | high-impact polystyrene |
| HSDB | Hazardous Substances Data Bank |
| HV | hazard value |
| HWL | hazardous waste landfill |
| IARC | International Agency for Research on Cancer |
| IC | integrated circuit |
| IPCC | Intergovernmental Panel on Climate Change |
| IQR | interquartile range |
| IPS | in-plane switching |
| IRIS | Integrated Risk Information System |
| IS | impact score |
| ISO | International Standards Organization |
| ITO | indium-tin oxide |
| kg | kilogram |
| kWh | kilowatthour |
| L | liter |
| LC | lethal concentration |
| LCA | life-cycle assessment |
| LCD | liquid crystal display |
| LCI | life-cycle inventory |
| LCIA | life-cycle impact assessment |
| LD | lethal dose |
| LDPE | low density polyethylene |
| LNG | liquified natural gas |
| LOAEL | lowest observed adverse effect levels |
| LPG | liquified petroleum gas |
| $m^3$ | cubic meter |
| MACT | maximum achievable control technology |
| MCC | Microelectronics and Computer Technology Corporation |
| Mfg | manufacturing |
| MJ | megajoule |
| MTBF | mean-time-before-failure |
| N | nitrogen |
| NESHAP | National Emission Standards for Hazardous Air Pollutants |
| Ni | nickel |
| NIEHS | National Institute of Environmental Health Sciences |
| NIOSH | National Institute of Occupational Safety and Health |
| NOAEL | no observed adverse effect levels |
| $NO_2$ | nitrogen dioxide |
| $NO_x$ | nitrogen oxides |
| NPDES | National Pollutant Discharge Elimination System |
| NRR | nonrenewable resource |
| NSC | National Safety Council |
| ODP | ozone depletion potential |

| | |
|---|---|
| OEM | original equipment manufacturer |
| ORNL | Oak Ridge National Laboratory |
| OSHA | Occupational Safety and Health Administration |
| OTV | odor threshold value |
| P | phosphorus |
| Pb | lead |
| PbO | lead oxide |
| PC | polycarbonate / personal computer |
| PECVD | plasma-enhanced chemical vapor deposition |
| PEE | polyethylene ether |
| PEL | permissible exposure limit |
| PET | polyethylene terephthalate |
| PM | particulate matter |
| $PM_{10}$ | particulate matter with an aerodynamic diameter less than 10 micrometers |
| PMLCD | passive matrix liquid crystal display |
| PMMA | poly(methyl methacrylate) |
| $PO_4^{3-}$ | phosphate |
| POCP | photochemical oxidant creation potential |
| POTW | publicly owned treatment works |
| PS | polystyrene |
| PVA | polyvinyl alcohol |
| PWB | printed wiring board |
| QSAR | quantitative structure-activity relationship |
| RAIS | Risk Assessment Information System |
| RC | recycled content |
| RCRA | Resource Conservation and Recovery Act |
| REL | recommended exposure limit |
| RfC | reference concentration |
| RfD | reference dose |
| RIE | reactive ion etching |
| RR | renewable resource |
| RTECS | Registry of Toxic Effects of Chemical Substances |
| RWL | radioactive waste landfill |
| SAR | structure-activity relationship |
| SD | standard deviation |
| SDWA | Safe Drinking Water Act |
| SETAC | Society of Environmental Toxicology and Chemistry |
| SF | slope factor |
| $SF_6$ | sulfur hexafluoride |
| Sn | tin |
| $SO_2$ | sulfur dioxide |
| $SO_x$ | sulfur oxides |
| SWL | solid waste landfill |
| TCLP | Toxicity Characteristic Leachate Procedure |
| TFT | thin-film transistor |
| TORNRC | The Oak Ridge National Recycle Center |

| | |
|---|---|
| TN | twisted nematic |
| tox-kg | toxic-kilograms |
| TRI | toxic release inventory |
| TSP | total suspended particulate |
| TSS | total suspended solids |
| U | uranium |
| UT | University of Tennessee |
| UWR | Universal Waste Rule |
| VDU | video display unit |
| VOC | volatile organic compounds |
| WOE | weight of evidence |
| WWT | waste water treatment |