Paper Calculator

presented by environmental paper network

Lifecycle Environmental Impact

The following is a break down of the environmental impact of your choices. These impact estimates were made using the Environmental Paper Network Paper Calculator. For more information visit www.papercalculator.org.

Remember to cite Environmental Paper Network when using information provided by the Paper Calculator. A sample citation is available at www.papercalculator.org.

	Baseline Paper
Wood Use	10 tons
Net Energy	87 million BTU's
Greenhouse Gases	14,934 pounds CO2 equiv.
Water Consumption	60,931 gallons
Solid Waste	5,124 pounds
NOx	25 pounds
Purchased Energy	59 million BTU's
SO2	71 pounds
Particulates	16 pounds
Hazardous Air Pollutants (HAP)	7 pounds
Volatile Organic Compounds (VOCs)	8 pounds
Total Reduced Sulfur (TRS)	1 pounds
Total Suspended Solids (TSS)	46 pounds
Chemical Oxygen Demand (COD)	53 pounds
Biochemical Oxygen Demand (BOD)	26 pounds

Explanation of Data Values

Wood Use

Wood use measures the amount of wood required to produce a given amount of paper. The number of typical trees assumes a mix of hardwoods and softwoods 6-8" in diameter and 40' tall. Calculated collaboratively by Conservatree, Environmental Defense Fund, and Environmental Paper Network.

The Baseline Paper Paper uses 10 tons, made from about 64 trees

Net Energy

The Paper Calculator includes an energy credit for energy that is created by burning paper – or the methane that decomposing paper creates – at the end of its life. The **Net Energy** takes the total amount of energy required to make the paper over its life cycle, and subtracts this energy credit. If most of the energy used to make the paper is purchased, then the energy credit might make the Net Energy lower than the Purchased Energy. The average U.S. household uses 91 million BTUs of energy in a year.

The Baseline Paper Paper uses 87 million BTU's, the equivalent of about 1 homes/year

Greenhouse Gases

Greenhouse gases, including carbon dioxide (CO_2) from burning fossil fuels and methane from paper decomposing in landfills, contribute to climate change by trapping energy from the sun in the earth's atmosphere. The unit of measure is CO_2 equivalents. The average car emits 11,013 pounds of CO2 in a year.

The Baseline Paper Paper uses 14,934 pounds CO2 equiv., the equivalent of about 1 cars/year

Water Consumption

Water Consumption measures the amount of process and cooling water that is consumed or degraded throughout the life cycle of the paper product. The largest components of water consumption come from the production of purchased electricity, and the use of process and cooling water at pulp and paper mills. Water volume indicates both the amount of fresh water needed and the potential impact of discharges on the receiving waters. 1 Olympic-sized swimming pool holds 660,430 gallons.

The Baseline Paper Paper uses 60,931 gallons, the equivalent of about 0 swimming pools

Solid Waste

Solid Waste includes sludge and other wastes generated during pulp and paper manufacturing, and used paper disposed of in landfills and incinerators. 1 fully-loaded garbage truck weighs an average of 28,000 pounds (based on a rear-loader residential garbage truck).

The Baseline Paper Paper uses 5,124 pounds, the equivalent of about 0 garbage trucks

Nitrogen oxides (NO_x)

Nitrogen Oxides (NOx, which include NO and NO_2) are products of the combustion of fuels that contain nitrogen. NOx contribute to acid rain and can react with volatile organic compounds and sunlight in the lower atmosphere to form ozone, a key component of urban smog. The average 18-wheel truck emits 261 pounds of NOx in a year.

The Baseline Paper Paper uses 25 pounds, the equivalent of about 0 18-wheelers/year

Purchased Energy

A subset of total energy, **purchased energy** measures how much energy comes from purchased electricity and other fuels. The unit of measure is British Thermal Units (BTUs). The average U.S. household uses 91 million BTUs of energy in a year.

The Baseline Paper Paper uses 59 million BTU's, the equivalent of about 1 homes/year

Sulfur dioxide (SO_2)

Chemical compound produced when boilers burn fuel that contains sulfur. Of the fuels used in the paper industry, oil and coal generally contain the highest quantities of sulfur. **Sulfur dioxide** contributes to air pollution problems like acid rain and smog. The average 18-wheel truck emits 5.5 pounds of SO2 in a year.

The Baseline Paper Paper uses 71 pounds, the equivalent of about 13 18-wheelers/year

Particulates

Particulates are small particles generated during combustion, and pose a range of health risks, including asthma and other respiratory problems, when inhaled. The average urban bus emits 11.2 pounds of particulate matter in a year.

The Baseline Paper Paper uses 16 pounds, the equivalent of about 1 buses/year

Hazardous Air Pollutants (HAP)

Hazardous Air Pollutants are any of a group of 188 substances identified in the 1990 Clean Air Act amendments because of their toxicity.

The Baseline Paper Paper uses 7 pounds

Volatile Organic Compounds (VOCs)

Volatile Organic Compounds (VOCs) are a broad class of organic gases, such as vapors from solvent and gasoline. VOCs react with nitrogen oxides (NOx) in the atmosphere to form ground-level ozone, the major component of smog and a severe lung irritant.

The Baseline Paper Paper uses 8 pounds

Total Reduced Sulfur (TRS)

Total Reduced Sulfur compounds cause the odor associated with kraft pulp mills. Exposure to TRS emissions has been linked to symptoms including headaches, watery eyes, nasal problems, and breathing difficulties.

The Baseline Paper Paper uses 1 pounds

Total Suspended Solids (TSS)

Total suspended solids (TSS) measure solid material suspended in mill effluent, which can adversely affect bottom-living organisms upon settling in receiving waters and can carry toxic heavy metals and organic compounds into the environment. The average home discharges 207 pounds of Total Suspended Solids (TSS) in a year.

The Baseline Paper Paper uses 46 pounds, the equivalent of about 0 homes/year

Chemical Oxygen Demand (COD)

Chemical Oxygen Demand (COD) measures the amount of oxidizable organic matter in the mill's effluent. Since wastewater treatment removes most of the organic material that would be degraded naturally in the receiving waters, the COD of the final effluent provides information about the quantity of more persistent substances discharged into the receiving water. The average home discharges 465 pounds of Chemical Oxygen Demand (COD) in a year.

The Baseline Paper Paper uses 53 pounds, the equivalent of about 0 homes/year

Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand (BOD) measures the amount of oxygen that microorganisms consume to degrade the organic material in the wastewater. Discharging wastewater with high levels of BOD can result in oxygen depletion in the receiving waters, which can adversely affect fish and other organisms. Average home discharges 186 pounds of Biochemical Oxygen Demand (BOD) in a year.

The Baseline Paper Paper uses 26 pounds, the equivalent of about 0 homes/year

Paper Content and Details:

Paper Name:	Baseline Paper
Paper Grade:	Uncoated Freesheet
Quantity (per year)	5332.28 pounds
Percent Recycled Content:	0%
Total Pulp Content:	84%

Pulp Types and Sources

Percentage of Virgin Pulp:	100%
Percentage Kraft Bleached:	100%
Percentage Kraft Unbleached:	0%
Stone or pressurized groundwood:	0%
Thermomechanical:	0%

Recycled Pulp Types

Percentage of recycled Pulp:	0%
Recycled Office Paper:	0%
Recycled newspaper:	0%
Recycled corrugated containers:	0%
Recycled Mixed Paper/ Board:	0%

Kraft Bleaching Technology

Elemental Chlorine Free (ECF):	60%
Enhanced EECF:	40%

Kraft Unbleached Composition

Linerboard:	0%
Medium:	0%
Integrated:	0%
Non-integrated:	0%

The Paper Calculator is based on research done by the Paper Task Force, a peer-reviewed study of the lifecycle environmental impacts of paper production and disposal. The underlying data in the Paper Calculator are updated regularly.

Questions? Comments?
Contact Environmental Paper Network

For more information visit www.papercalculator.org.