

WORLD·WATCH

Volume 20, Number 2

Vision for a Sustainable World

March/April 2007

LIFE-CYCLE STUDIES

Diapers

Excerpted from the March/April 2007 issue of *World Watch* magazine

© 2007 Worldwatch Institute

All the URLs and e-mail addresses within the pages of this PDF are live and clickable when viewed on a computer appropriately configured.

To subscribe to *World Watch*, click [here](#),
or go to www.worldwatch.org/taxonomy/term/41

 WORLDWATCH
INSTITUTE
www.worldwatch.org

LIFE-CYCLE STUDIES

Diapers



© Image Source/CORBIS

Overview

Humans are the only animals to diaper their young (and not all humans do so), and such an unnatural custom ought to invite more comment—yet the first literary reference to the diaper dates only to the 10th century and it had nothing to do with babies' bottoms. Diapering is a showcase of human ingenuity: the Incas used layers of dried grass in rabbit skin covers, the Inuit sphagnum moss and sealskins. Early Europeans used swaddling strips of tightly cross-woven linen.

In more recent times, cloth diapers were the norm in developed societies until World War II, when mothers newly entering the workforce began to seek greater convenience. The disposable diaper was launched in 1949 by U.S. housewife-turned-inventor Marion Donovan, who began selling the “Boater” at Saks in New York. Since then, manufacturers in the United States, Europe, and Japan have competed to streamline the bulky garments. Super-absorbent polymers developed by the Japanese company Unicharm revolutionized the modern disposable, sharply reducing leakage and weight. India ranks first in disposable use at 93 billion diapers per year, 20 percent of the global total. The diaper has outgrown babies and is now used by adults suffering from incontinence of varied causes.

Closing the Loop

An infant needs up to 7,000 diaper changes before leaving diapers behind. This typically requires 36–60 cloth diapers from birth to potty training, adding roughly 14 kilograms of cotton to landfill waste (which should biodegrade within six months). However, use of cloth diapers entails other costs, such as greater water and energy use: perhaps 76,000 liters of water are needed to launder diapers for one infant over two or three years, and each washing-machine load is equivalent to about 35 toilet flushes.

The 450 billion disposable diapers used each year contribute nearly 77 million tons of solid waste to landfills, and a disposable diaper takes at least 500 years to degrade. Because less than 1 percent of the human waste from single-use diapers is flushed, landfills become breeding grounds for harmful bacteria and viruses.

Efforts are being made to reduce these impacts. Use of unbleached hemp and organic cotton can reduce chemical loads from the manufacture of cloth diapers. In 2000 the Mexican company Absormex created a disposable “bioactive” diaper that degraded 200 percent faster than ordinary disposables. Reusing diapers' sanitized wood pulp in wallboard and paper, and composting soiled diapers, have also been proposed. Dispensing with diapers altogether has also been tried, apparently for a very long time, by parents using “elimination communication” with their undiapered infants to anticipate and meet elimination needs. Perhaps the ultimate diaper is no diaper at all.

© Bettmann/CORBIS



Applying cloth, circa 1950.

Manufacture

Cloth diapers are typically made of industrialized cotton grown using lots of pesticides (e.g., methyl parathion, 2,4-D; cotton farming accounts for 10 percent of global pesticide use and 25 percent of herbicide use) and water (one kilogram of cotton requires 2,400 liters). Often the cotton is bleached during processing, which results in further chemical waste.

Disposable diapers are made of plastics like nylon, polyester, polyethylene, and/or polypropylene produced by forcing resins through tiny holes at high temperatures and then rolling the threads flat with irons to bond the fibers. The ordinary disposable has both a polyethylene exterior and a polypropylene interior that sandwiches an absorbent pad composed of tissue, wood-pulp cellulose, and super-absorbent polymers. The elastic around the legs and waist is made of polyurethane foam, rubber, and/or Lycra.