

## **APPENDIX 6: IS THE USE OF DISPOSABLE DIAPERS AND SANITARY PADS SUSTAINABLE?**

### **Background**

In autumn 2005, environment minister Jan-Erik Enestam expressed his disgust on disposable diaper use claiming that they were choking Finnish landfills. The traditional maternity box, which has been provided free of charge to all mothers with each new child by Finland's Family Federation since 1951, included that year a guide promoting the use of reusable diapers for "ecological" reasons. The instructions stated that disposable diapers constituted the greatest single component of Finnish household waste and that the use of disposable diapers led to greater consumption of natural resources than reusable diapers.

There was even public talk of the responsibility of the parent to be around all the time. The thinking assumes that the need for the pot can be anticipated. The use of diapers can be avoided altogether.

At the same time, campaigns were launched to get menstruating women to switch to reusable sanitary pads or moon cups as part of Finland's sustainable development efforts.

Yet is the use of disposable diapers, sanitary pads and tampons actually in conflict with the goals of sustainable development? Should parents of young children, incontinent adults and much of the female population feel ashamed about using disposable products?

### **Filling Finland's landfills**

The average Finn generates 300 kg of household waste each year (including packaging waste generated at stores). The country accumulates 1.5 million tons of household waste annually, which takes up about 0.15 km<sup>2</sup> of landfill area each year.

Diapers and sanitary pads constitute about 12 kg or 4 % of household waste per person, most of it baby diapers. With 60,000 babies born each year in Finland and each spending 2.5 years in diapers, we get 40,000 tons a year of baby diapers (2.5 years x 60,000 babies x 0.14 kg per diaper x 5 diapers per day x 365 days per year). Of this, about 15 % is cellulose, 15 % polymer plastics, and 70 % excreta.

Urine, feces and cellulose are all natural products and biodegrade rapidly. This leaves about 6,000 tons of polymer plastics (i.e. 100 kg/baby), that are not biodegradable and demand about 0.001 km<sup>2</sup> of landfill area annually. The polymers are currently made from oil. How large is a problem when organic hydrocarbons are extracted from the ground, modified and returned to ground?

Closer assessment of the facts suggests diapers represent no threat to sustainable development in Finland. Even if they add marginally to landfill expansion, there is plenty of room. Alternatives like composting or combustion at a power plant to recover the energy value are also available.

## **Fundamental environmental analysis**

The United Kingdom Environment Agency's report *Life Cycle Assessment of Disposable and Reusable Nappies in the UK* /69/, identifies and quantifies the environmental impacts of nappy use, including all materials and energy consumed during manufacture, distribution, use and disposal for three types of nappies: disposable nappies, home laundered flat cloth nappies, and commercially laundered prefolded cloth nappies delivered to the home.

The environmental impact categories assessed were resource depletion, global warming, ozone depletion, human toxicity, acidification, fresh-water aquatic toxicity, terrestrial toxicity, photochemical oxidant formation, and eutrophication.

The study concludes that for the three nappy systems assessed, there is no significant difference in the environmental impact, even if each product had its own distinct life cycle.

Although the study was carried out in accordance with guidelines set forth by EU environmental policy experts, it ignored a key question: What were the absolute and relative significance of the problems? In the following discussion, therefore, we attempt to fill out the study by working out the absolute and relative environmental impacts of disposable diapers. We assume the energy production profile and other constraints are roughly equivalent for the UK and Finland. We focus only on the most foreseeable impacts.

**Resource depletion:** Crude oil and natural gas are by far the most important resources affected here. The British life-cycle analysis indicates that a total of 200 kg of oil and gas is consumed in reusable nappies of a baby. In Finland this translates to 12,000 tons of oil and gas annually. This corresponds to less than 0.1 % of Finland's oil and gas consumption.

The world's accessible oil and gas reserves are rapidly being consumed (e.g. global consumption is about 1,000 barrels a second). On the other hand, other hydrocarbon reserves such as oil shale and coal supplies remain abundant and could last for centuries. Energy and polymers can be produced also from renewable resources.

**Global warming:** Life-cycle analysis shows that the effects of global warming are about 600 kg CO<sub>2</sub> eq. per baby for the use of disposable diapers, which works out to a total of 35,000 tons CO<sub>2</sub> eq. a year, or 0.04 % of Finland's greenhouse gas emissions.

Greenhouse emissions could have serious consequences, the magnitude of which is hard to estimate. In any case, diapers represent a miniscule part of this problem. Furthermore, emissions decrease as the energy production profile changes.

**Ozone depletion:** Life-cycle analysis indicates the amount of emissions that affect ozone layer depletion works out to 0.0002 kg CFC-11 eq. per baby. This is due largely to waste processing after use. This means Finnish babies contribute a total of about 12 kg CFC-11 eq. annually to ozone depletion. Finland's production of chemicals that deplete the ozone layer is presently 10,000 kg CFC-11 eq. /67/. Emissions are probably much greater than this because the imports of products with CFC-emitting potential was two orders of magnitude higher than at present as recently as 1990.

In any case, CFC emissions are rapidly declining, and if international treaties continue to be upheld, the ozone layer should recover to its 1980s condition by 2050 /64/. Thus, in this

improving situation, there are no signs of any significant new ozone depletion problems emerging and the relationship of diapers to this problem is tenuous at best.

**Acidification:** Life-cycle analysis indicates less than 4 kg SO<sub>2</sub> eq. acidification per baby, mainly associated with diaper manufacture and transport. This is roughly 200 tons per Finnish baby population per year, or about 0.1 % of acidifying emissions in Finland.

Acidification is a localized problem in Finland, so it has little impact on biodiversity or natural wealth /64/. Diapers contribute almost nothing to this problem, and the biggest gains are to be had in improvements in electrical power generation and maritime traffic. A marginal portion of a local problem is not much of a problem.

**Eutrophication of fresh waters:** Life-cycle analysis gives an eutrophication impact of about 0.34 kg PO<sub>4</sub> eq. per baby, stemming largely from manufacturing, transport and waste life cycles. The disposable diaper use of Finnish babies overall generates roughly 20 tons PO<sub>4</sub> eq. of nutrient impact. This is very roughly /69 and 67/ 0.02 % of Finland's artificial (anthropogenic) eutrophication effect.

While the adding of nutrients is usually seen as a plus for soils, excessive nutrients can be a moderate problem in fresh water bodies. Diaper use, however, contributes virtually nothing to this problem.

**Overall impact:** Of the categories surveyed, global warming is the only one here likely to have a substantial impact on the environment. This effect, like most of the effects in the other categories, depends mostly on how energy is used and produced.

The UK diaper study shows that by far the greatest expenditure of energy in the disposable diaper's life cycle occurs during manufacture, while the greatest energy inputs in reusable diapers are associated with washing machine use. In terms of energy consumption, disposable diapers perform slightly better than reusable diapers.

## **Social and health issues**

Low birthrates are considered problematic in many European countries, including Finland. One reason for the low birth rate is the pressure on young people, who today are responsible for not only the child's well-being, but also the well-being of the family and securing a decent future for the nation. This is a big responsibility.

With the available time in the day, a good parent is expected to spend time cuddling the baby, reading and singing to the baby, playing with the baby, changing the baby, feeding the baby, dressing the baby, washing the baby – and now also washing the diapers. The parents also have to deal with possible rashes and other skin hygiene problems.

It is the parents' duty to decide the amounts of diapers they use and what kind of diapers they use. If they are pressured to conform to routines that disrupt their family routine, this will only add stress, frustration, and damage family harmony.

### **Should parents, elderly and women feel guilt for using disposable diapers or sanitary pads?**

While energy intensity varies during the life cycle of diaper types, the overall energy use is essentially the same. In the UK, taking into account the energy production profile, the greenhouse gas effect of a baby using diapers for 2.5 years corresponds to about 3,000 kilometers of driving, or the equivalent to the amount of emissions generated by flying Finland's environment minister on a commercial flight to Brussels and back.

Each society determines its energy production profile. The Ministry of the Environment is guilty for shelving of three energy projects that would have substantially reduced Finland's greenhouse gas emissions:

- The Vuotos hydropower project
- The Pori offshore wind farm project
- The Vantaa waste incineration facility

Any one of these projects would have cut the greenhouse gas emissions of Finland by an order of magnitude more than what is generated by the use of diapers and sanitary pads by Finns. Moreover, the emissions related to diapers are inevitable, no matter if disposable or reusable products are involved.

On the other hand, Europe's low birth rates could endanger the well-being of current generations. Subjecting mothers to behavior that badly suits their lifestyle and possibly endangers the health of the baby will do little to increase the birth rate in Finland.

While there is no justification for parents, seniors or women to feel guilty about using disposable diapers, sanitary pads or tampons, they might be justified in feeling manipulated. The people doing the manipulating use shame about natural functions to gain power in the name of sustainable development – and they do it on taxpayer money.