

**Sustainability Report:**  
Baby diapers and incontinence products

*Executive summary*



**Prepared by:**  
The Absorbent Hygiene Products  
Manufacturers Committee of EDANA



## Sustainability Report – Baby diapers and incontinence products

### Foreword

We are delighted to present EDANA's first ever 'Sustainability Report: Baby diapers and incontinence products', an initiative of our Absorbent Hygiene Products Manufacturers Committee's (HAPCO) Environmental Task Force.

This report is a timely document, in line with both today's global drive for increased sustainable development and our industry association's mission 'to create the foundation for sustainable growth of the nonwovens and associated industries through active promotion, education and dialogue'.

Composed of about 200 member companies, EDANA represents, amongst other sub-sectors, the entire supply chain of nonwovens and absorbent hygiene products. Nonwovens are unique engineered fabrics offering cost effective solutions for an ever-increasingly wide variety of applications, such as absorbent hygiene products, surgical gowns and drapes, protective suits and masks, air, liquid and gas filtration, oil spillage products and geotextiles, to name but a few.

We believe this Sustainability Report clearly demonstrates the important role modern disposable baby diapers and incontinence products play in terms of the three key pillars of sustainable development, namely social progress, responsibility for the environment and maintenance of high and stable levels of economic growth and employment.

There can be no question about the numerous benefits that baby diapers and incontinence products bring to today's society, in terms of improved quality of life, cleanliness, healthier skin, cost-effective convenience and, of utmost importance to incontinence sufferers, the additional essential benefits of independence and dignity.

Member companies grouped within EDANA have, for many years, been at the forefront of industry environmental management, for example, with the publication of Environmental Guidelines in the early 1990s, even before the introduction of the Eco-Management and Audit Scheme (EMAS). We have also established a tradition of voluntary industry cooperation and codes of practice in various areas such as product safety. In recent years we have demonstrated ongoing environmental awareness, with the investment of time and resources in several life cycle analyses (LCA) on baby diapers and incontinence products.

As a result of this early environmental awareness, and as a consequence of the many innovations introduced within this industry throughout the supply chain, the environmental impact of diapers and incontinence products has been measurably reduced over the past two decades, as illustrated by this report.

Our dynamic and fast-growing industry contributes considerably to the European economy and competitiveness. We are committed to improving the life of millions of people by providing superior and innovative products while continuously striving for improvements in the sustainability profile of our products.

We are proud of these achievements in sustainability to date as well as being ever mindful of our ongoing responsibilities. Our industry supports responsible environmental stewardship in its manufacturing processes and acknowledges that our products do contribute to a small fraction of the overall household waste stream. Manufacturers strive constantly to improve the overall environmental profile of their products, and waste reduction is a key focus area. Over the past 15 years the industry has achieved around a 40% reduction in the overall weight of baby diapers. Producers have ensured that the products are compatible with prevailing forms of household waste management. This commitment and the evidence in this report should be a source of reassurance for consumers and stakeholders.

EDANA and its member companies endeavour to continue this positive trend and welcome the opportunity for open dialogue with responsible authorities at all levels, as well as with consumer and environmental organisations, to be part of the solution to today's sustainable development challenges.

The industry, as represented by EDANA is committed to striving for continual improvement in all aspects of social progress, environmental performance and economic growth. We embrace the challenge of achieving sustainable development and to do so encourage ongoing innovation and new ways of thinking within our industry.



Knud Waede Hansen  
Chairman of the Board of EDANA



Pierre Wiertz  
General Manager, EDANA

## Sustainability Report – Baby diapers and incontinence products

### Preface

I am very pleased to be able to introduce readers to this document and to be among the first to commend the absorbent hygiene products industry for taking the initiative to produce this report on the sustainability performance of disposable baby diapers and incontinence products.

As defined by the WBCSD<sup>1</sup>: Eco-efficiency is achieved by the delivery of competitively-priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the full product life cycle. In short, it is concerned with creating more value with less impact.

In order to manage this process of continuous improvement, it is of course necessary to objectively measure what the impacts are, not just from product manufacturing operations, but upstream in raw material use and downstream in the product use and post-use disposal phases.

Reporting on these data and trends in an accessible and transparent way is an essential step in the process, as stakeholder acceptance is fundamental to industry maintaining its 'licence to operate' and in ensuring a stable environment for continued long-term investment for innovation.

In taking this initiative to invest their time and resources in compiling this first sustainability report, the absorbent hygiene products industry sector joins the ranks of those leaders who have recognised and embraced the challenge of integrating the quest for economic growth with parallel efforts to achieve continuous improvements in environmentally sound practices.

I recommend this report to all those with a serious interest in understanding this industry and its commitment to progress.



Bill Duncan,  
Managing Director ASSURRE<sup>2</sup>

<sup>1</sup> World Business Council for Sustainable Development.

<sup>2</sup> ASSURRE, the Association for the Sustainable Use and Recovery of Resources in Europe, is a multi-sector industry-led coalition working exclusively on evolving European environmental policy and legislation relating to sustainable resource management. It is recognised by European Institutions and business stakeholders as an authoritative and independent source of knowledge and expertise in the field of sustainable development.

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“The absorbent hygiene products industry sector joins the ranks of those leaders who have recognised and embraced the challenge of integrating the quest for economic growth with parallel efforts to achieve continuous improvements in environmentally sound practices.”

Bill Duncan, Managing Director ASSURRE

## Executive summary

### Introduction

In just about every walk of life today the question of sustainability is on the minds of policy makers, scientists, industrialists, local community groups, customers and environmentalists alike.

Issues related to sustainability affect everything that we do – where we live and how we live, where we work and what we do, what we consume, what our open spaces look like, how we travel, how we view the communities within which we live and how we think about the future. No generation before us has focused so sharply on these issues as we do today.

In this report<sup>1</sup> the manufacturers of disposable baby diapers and incontinence products, who are members of EDANA, document the role their products and processes play in the three key areas generally accepted as critical to sustainable development:

- Social progress which recognises the needs of everyone;
- Effective protection of the environment and prudent use of natural resources;
- Maintenance of high and stable levels of economic growth and employment.

### Modern disposable baby diapers and incontinence products

The move towards disposable baby diapers began in earnest in the early 1960s. Before that, diapers were either cotton towelling or cotton muslin which, with laundering, could be reused. The early disposable diaper comprised wadding made from cellulose as the absorbent core with a plastic backing and a synthetic fabric sheeting material as the surface closest to the baby's skin.

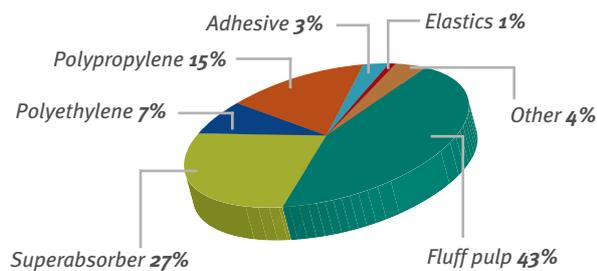
Since then, continuous product innovations including the use of superabsorbent polymers, resealable

tapes and elasticised waist bands have improved the products considerably. They are now much thinner and much more absorbent as well as being more comfortable to wear and easier to use. Their widespread use has been accompanied by a marked reduction in skin irritation in individual children and a decrease in the spread of infectious diseases amongst children in group care environments. The product range has more recently been extended into children's toilet-training phase with the introduction of training pants and pant diapers.

Absorbent products specifically designed for adult incontinence were introduced into the European market in the late 1960s. While they are based on the same

Graph 1

Average baby diaper composition 2004



<sup>1</sup> All data referred to throughout this document has been sourced from the references listed in Appendix 2 of the full report or from information supplied by member companies.

technology as baby diapers, their development demanded new and different expertise because of the size of the product and the diversity of needs to be met by their use. A wide range of products is now available including gender-specific products, different sizes to suit varying body shapes and anatomies and different levels of absorbency.

- The absorbent core structure is the key component and is made out of a mixture of cellulose pulp and superabsorbent polymers.
- The backsheet is typically made of 'breathable' polyethylene film or a nonwoven and film composite which prevents wetness transfer to the bed or clothes.

- high absorbency and breathable nature;
- Being easy and convenient to use, readily available and cost-effective;
- Eliminating the need for constant laundering, and disposable as part of regular household waste.

Incontinence, which is the inability to control the release of urine or faeces from the body, is experienced by many otherwise healthy and active individuals and can be both distressing and socially isolating.

## Product composition

Modern baby diapers and incontinence products have a layered construction, which allows the transfer and distribution of urine to an absorbent core structure where it is locked in.

- The topsheet closest to the skin is made of soft nonwoven fabric and transfers urine quickly to the layers underneath.
- The distribution layer receives the urine flow and transfers it on to the absorbent core.

## Social developments and lifestyle

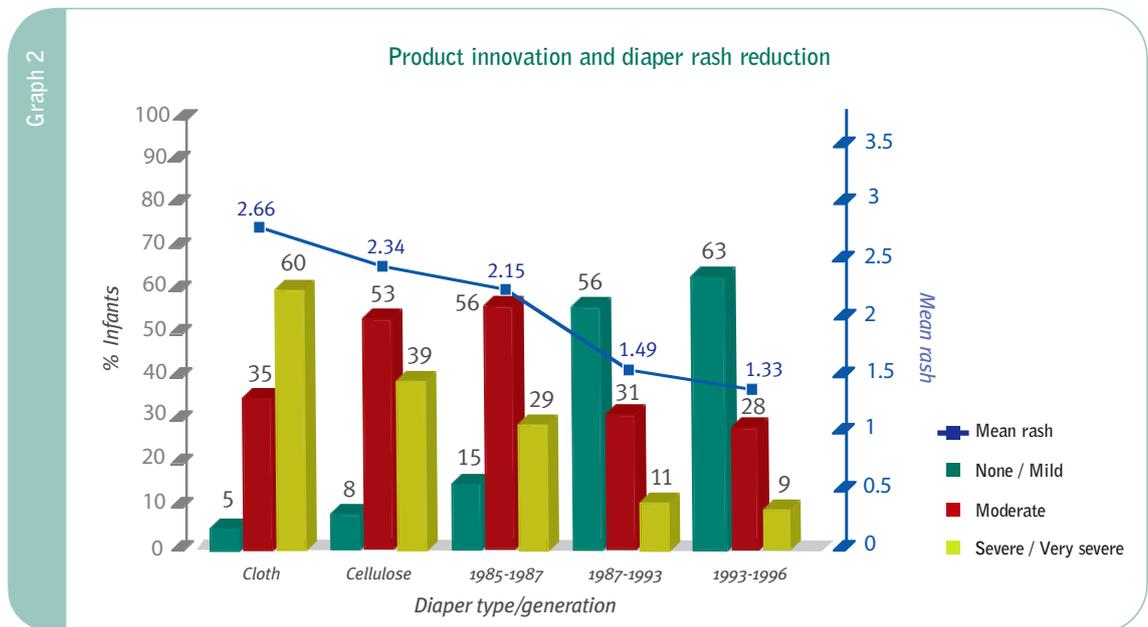
Modern disposable baby diapers and incontinence products have made an important contribution to the quality of life of millions of people.

Disposable baby diapers have become the product of choice for over 95 per cent of all families in Europe and are recognised as:

- Being healthy for the infant's skin, reducing rashes and irritations and preventing infections;
- Providing superior comfort for the baby due to their fit, softness,

Adult incontinence products contribute significantly to the quality of life of people suffering this condition by:

- Providing hygiene, cleanliness and independence;
- Saving sufferers or their carers the unpleasant task of managing heavily soiled articles;
- Allowing users to maintain their sense of dignity and enabling them to get out, work, take part in social activities and lead a full and satisfying life.



## Skin health benefits

Scientific evidence shows that the advances made in diaper technology over the past 15 years have produced real benefits in skin care, dryness and leakage protection.

Many paediatricians and nurses confirm that the number of infants seen with diaper dermatitis is declining over time. The number of cases of diaper rash reported in general appears to have decreased by about 50 per cent since the introduction of disposable diapers. Noticeably, there has been a large decrease in the number of severe diaper rash cases reported, falling from 67 per cent of all cases seen before the use of disposable diapers to 9 per cent in the 1990s.

## Commitment to safety

The principle that our products must be safe for consumers, employees and the environment guides our industry in raw material selection, product design, manufacturing, consumer communications and considerations relevant to the disposal of our products.

We not only comply with the legal framework, but also conduct our own safety evaluation programmes to ensure that our products are safe. Baby diapers and incontinence products have an excellent safety record. They and the materials used within them have been proven to be safe for their intended use and have a long history of safe use by millions of people.

## Corporate social responsibility

The manufacturers of disposable baby diapers and incontinence products strive to ensure that we respect and exceed laws and regulations wherever we do business; we operate with due care to health and safety considerations; we encourage diversity; we deal fairly and we actively manage environmental stewardship.

We do not conduct our business in a vacuum but collaborate closely with the communities in which we operate to work on projects that address issues of incontinence, give children a good start to life, address infant health issues and create partnerships on environmental initiatives.

## Environmental stewardship

We are committed to improving the life of consumers by providing superior products while continuously striving for improvements in the environmental quality of our products by:

- Using raw materials that are safe for consumers and the environment;
- Supporting an integrated solid waste management approach;
- Producing products which are compatible with different solid waste treatment options;
- Working, where technically and economically feasible, to improve the environmental profile of our diaper and adult incontinence products.

Product innovations have not only delivered significant diaper performance improvements but have also resulted in measurable improvements in their environmental profile. The average diaper weight has reduced by around 40 per cent during the past 17 years. In an extensive life cycle assessment (LCA) analysis the impact of this weight reduction on the environmental profile of baby diapers along their entire product life cycle has been evaluated. Since 1987, 74 per cent of the recorded parameters for air emissions have decreased or remained stable and 60 per cent of the recorded parameters for water emissions have decreased.

The environmental impacts of these air and water emissions on global warming potential, acidification potential, eutrophication potential and photochemical ozone creation potential are as much as 20 per cent less in 2004 than they were in 1987 (see graph 3).

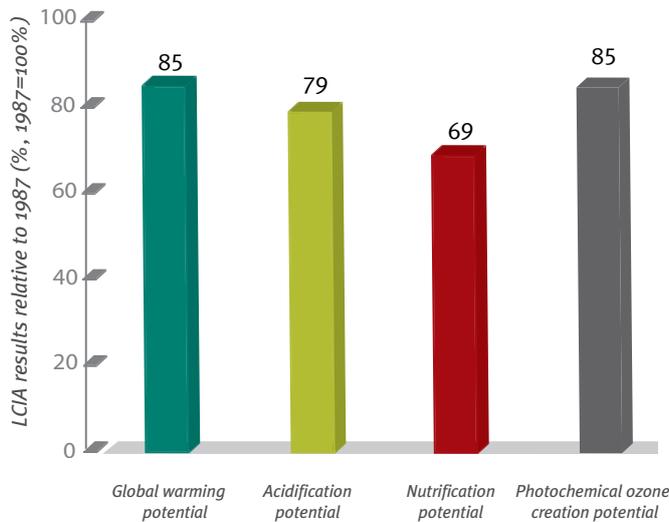
Assessments have also been undertaken by both industry and independent authorities comparing the environmental impacts of disposable and cloth diapers. None of these evaluations have been able to establish categorically the environmental superiority of any one diaper option over the other.

The most recent and most comprehensive analysis has been undertaken by the UK Environment Agency, the results of which were published in May 2005. The major conclusions of the study were that:

- None of the diaper systems studied was more or less environmentally preferable;

Graph 3

Trend for major environmental impact categories 1987-2004



- There was no significant difference between any of the environmental impacts of the disposable, home use cloth and commercial laundry diaper systems that were assessed in the study;
- The overall environmental impacts from waste management of any

diaper system do not contribute substantially to the overall totals.

The study identifies where and gives recommendations on how manufacturers of the different types of diaper can improve the environmental impact of their

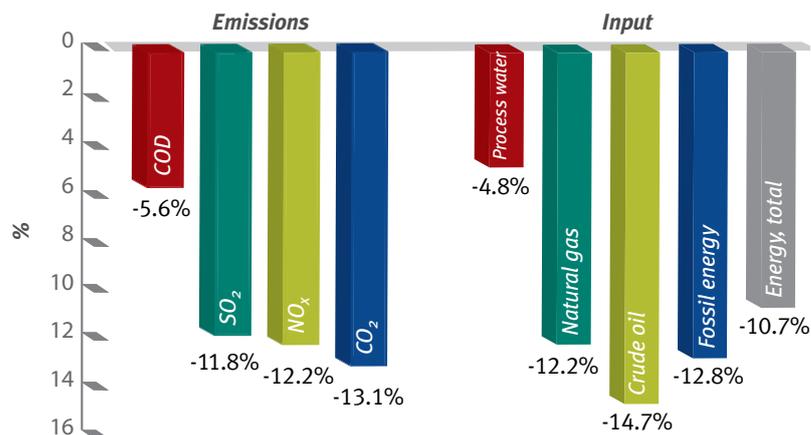
products. We take these recommendations seriously and continue to explore how best our member companies can implement further improvements in the design and manufacture of disposable diapers as part of our continued efforts and commitment to sustainable development.

LCAs have also been undertaken on incontinence products. The most recent was undertaken in 2004 by an independent research institute in Germany, the IFEU (Institut für Energie und Umweltforschung). As a result of the introduction of superabsorbent polymers there has been a significant reduction in the use of raw materials and natural resources. The reductions in air and water emissions between 1995 and 2002 are shown in graph 4. For example:

- Fossil CO<sub>2</sub> emissions into the air have reduced by over 13 per cent;
- Consistently, the use of fossil energy has reduced by just under 13 per cent.

Graph 4

Reduction in air and water emissions and in use of raw materials for incontinence products 1995-2002



## Diapers and incontinence products in municipal solid waste

Much of the discussion about diapers and the environment has focused on their contribution to solid waste. On average in Europe baby and incontinence diapers comprise around 2-3 per cent of municipal solid waste and between 0.3 and 0.4 per cent of total solid waste. By comparison, food and garden waste contribute some 10-20 times more to the European average municipal solid waste stream.

Diapers and incontinence products are compatible with prevailing waste disposal and treatment methods:

- They can be safely disposed in landfills where they are readily compressed and contained;
- They can be incinerated in properly functioning incinerators;
- They can be processed through composting operations, provided there is appropriate technology available to separate the biodegradable, cellulose-based parts from the synthetic pieces;
- Soiled diapers can be processed using mechanical-biological treatment (MBT) methods.

Along with company-specific initiatives undertaken to reduce waste, as an industry we also play our part in finding new and innovative solutions to reducing waste in the community. Through our membership of the Association for the Sustainable Use and Recovery of Resources in Europe (ASSURRE), we are currently involved in two projects, the Mechanical-Biological Treatment

project and the Sustainable Resource Management Through Sustainable Urban Management project.

Through involvement with projects like these we want to improve our understanding of waste issues and, in partnership with others, be part of the solution.

## Environmental policies and instruments

Local authorities, national governments, the European Union and international organisations are all increasingly using environmental policies and instruments to pursue environmental objectives. We support the introduction of measures which will help to reduce the overall environmental burden. There are some existing and proposed policy instruments however which are cause for concern for our industry as it is our view that they operate to discourage innovation or do not meet their objectives when viewed in a broader context.

Overall, we support the objectives of schemes such as eco-labels. In our experience however, such instruments can serve unintentionally to restrict rather than encourage environmental innovation. We do not support using financial instruments (such as incentives for particular products) as a way of reducing solid waste. In our view they distort markets, are against the spirit of free trade, have little to no impact on reducing the overall solid waste stream and simply transfer environmental impact from one area to another.

## Prudent use of natural resources

The natural resources used to manufacture diapers and incontinence products are wood, crude oil, energy and water. The wood pulp used in baby diapers and incontinence products represents less than 1 per cent of total wood consumption. No wood from virgin tropical forests is used in the manufacture of absorbent hygiene products.

Pulp production is a high-technology multistage process which extracts the natural polymer cellulose from wood. It is largely self-sufficient from an energy perspective with by-products of the process being used to provide most (or even a surplus) of the energy for the production facility. Surplus energy can be used in combined heat and power plants.

Members of EDANA are committed to supporting sustainable management of forests based on sound ecological science, social responsibility and economic viability. We encourage third-party verification or certification of compliance with sustainable forestry practices.

## The economic contribution

The size of the European market for disposable hygiene products is comparable with the US market. There are, however, significant variations between countries in terms of market penetration:

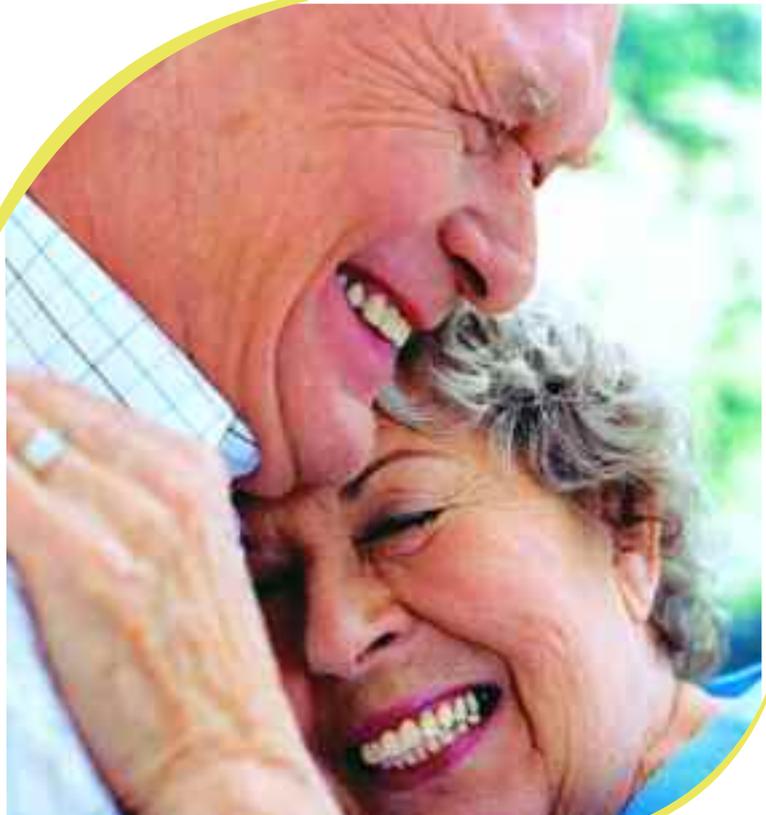
- In 2004 the annual volume of disposable baby diaper products sold was estimated to be

20.25 billion units with an annual market value in 2004 of some 4.5 billion euros;

- Over the past 2 years the total European baby diaper market is estimated to have grown by 2.7 per cent. Many of the established European markets are mature now and given current demographic trends are only growing slowly. The newer markets have grown by 9 per cent in the same period and are expected to continue to grow in coming years;

- The total estimated volume of incontinence products sold in Europe, the Middle East and Africa in 2004 is around 5 billion units with an estimated revenue value to manufacturers of some 1.5 billion euros;
- In total, the members of EDANA who manufacture baby diapers and incontinence products employ some 100,000 people in Europe; making a substantial contribution to the economic wellbeing of families and communities in the

countries of Europe. In 2003/04, some 20,000 of those were directly employed in the manufacture of absorbent hygiene products in Europe. This is matched by a similar number upstream within raw material supplier industries, not to mention those employed downstream in logistics and commercial operations.

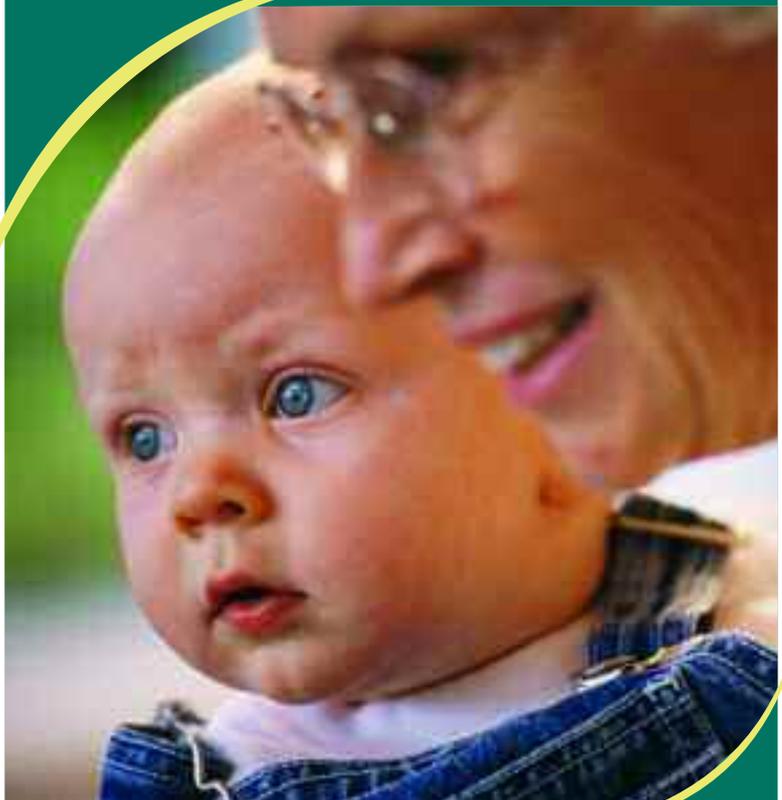


## Conclusion

- Disposable baby diapers and incontinence products have contributed to social progress in terms of quality of life, comfort, convenience, reduction in household chores and skin health benefits;
- Much has been done and still is being done to improve environmental performance in the production and design of baby diapers and incontinence products;
- Today's products are made in such a way as to make prudent and efficient use of natural resources;
- The manufacture and distribution of baby diapers and incontinence products contributes positively to the economies of Europe.

We believe we can demonstrate a good record of environmental improvement to date. We are not complacent, however. The challenge of improving the sustainability profile of disposable consumer goods like diapers and incontinence products is an ongoing one. By addressing all aspects of sustainability - social, environmental and economic - we are committed to improving the overall sustainability profile of baby diapers and incontinence products, while at the same time continuing to offer products that will improve people's lives around the world.

“Sustainable development aims to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.”



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