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Perfect chemistry



**Winner of the 3rd environmental ranking
survey by Hamburg Environmental Institute**

Perfect chemistry

Environmental protection: *The Hamburg Environmental Institute has for the third time examined the environmental performance of the world's largest chemical companies. The frontrunners have long been achieving good results with their environmentally compatible products. The majority of companies can only learn from them.*

Progress comes in a double pack of Persil tabs and ends very prosaically in a washing machine. The blue-and-white effervescent tablet for the cleanliness-conscious woman or man comes from Düsseldorf and is the pride and joy of the Henkel Group's product developers and environmental managers.

"Our life cycle assessments show that detergents pollute the environment most during the actual wash cycle, long after they have left our factory gates," explains Henkel manager Fritz Ötting. Now that all incompany processes have been optimized, it is actually during the wash itself that most energy is consumed and wastewater is subjected to heaviest pollution. But because Henkel feels responsible for the whole life cycle of its products, it regards this area as the most effective lever for improved environmental protection.

The compact tablets – two per wash – are meant to put an end to the environmentally damaging excessive consumption of detergents, because over-careful housewives like to use a little extra powder or a few more drops of liquid.

"From a purely financial standpoint, we could be all in favor of additional consumption," says a laughing Rüdiger Wagner, responsible for environmental protection training at Henkel. Yet such one-dimensional thinking has been all in the past at the Düsseldorf-based company

since Henkel boss Hans-Dietrich Winkhaus made environmental leadership his Group's strategic goal back in 1993 (see interview on page 4). In the sixth year following this declaration the Henkel workforce has done it, easily topping this year's eco ranking drawn up by the Hamburg Environmental Institute (HUI).

In brief

- Environmental protection is largely integrated into business operations.
- Systems for environmental management are standard, the best focusing on assessing product life cycles.
- The task for the future is ensuring the environmental compatibility of all products.

Following a comprehensive study, the HUI has for the third time graded the environmental performance of the world's fifty leading chemical companies. One special feature this time is that Beiersdorf and Boehringer Ingelheim Pharma volunteered to be tested and, with their fifth and seventh positions respectively, showed that though their sales may not rank with the biggest concerns, their environmental protection certainly does.

Using an already established procedure, the jurors scrutinized the Groups' products and processes as well as their strategy and management systems (see box on page 8) and they arrived at

very encouraging results. All, even the most insensitive chemical companies now have, albeit not always perfect, environmental management systems. The key issue in especially well-devised systems is increasingly the assessment of the whole life cycle of products and responsibility for this – or product stewardship.

Proactive and active companies at least (see tables from page 3) have long resolved the supposed contradiction between economy and ecology; a competitive advantage that is also increasingly appreciated by investors (see box on page 9).

When the HUI first began almost ten years ago to collect data on environmentally compatible products and processes, only five groups of companies boasted general management structures more or less consistently taking environmental issues into account. Most of them turned a deaf ear to this trend and preferred to show "environmental fanatics" the door.

In contrast, the HUI's verdict on this year's winner is almost euphoric: "There can be no doubt that Henkel is now the world's leading company in terms of environmentally compatible production and environmental management." In six out of ten categories, Henkel left its rivals especially from the USA standing. With a score of 398 points, a good 100 ahead of Johnson & Johnson, the winner

of three years ago, Henkel has taken an appreciable step toward its goal of sustainable development.

For instance, the Düsseldorf-based company is the world's largest processor of oils and fats from renewable raw materials, which are used as ingredients in all kinds of chemical products. Sometimes even other people's waste is recycled to create something new. Henkel's representatives in Norway, for example, discovered a gold mine in mud as it were. The shells of shrimps contain chitosan, a valuable raw material in cosmetics that keeps hair and skin supple. Previously these shells had been ground into animal feed for the most part.

Yet Henkel had other ideas. Right next to the plants of two major shrimp and prawn shellers in Tromsø a new factory was built in record time in which this expensive substance used in cosmetics is extracted and processed. This is also an example of how recycling does not necessarily – as often be-moaned by environmentalists –

have to be a "downcycling" into increasingly inferior products.

In order to be able to control efficiently its products and processes from an environmental standpoint and the closely connected safety and health angles, Henkel formulated so-called SHE standards in 1997. These 15 guidelines and the resulting directives and procedural instructions represent the binding yardstick with which all Group employees have to comply at the latest from the year 2001. This is ensured through regular internal audits as well as external certification, for instance, under the internationally recognized environmental management standard ISO 14001 or EMAS, the EU's eco-management and audit scheme.

The trend toward combining safety, health and the environment (SHE), as well as increasingly quality assurance, is discernible among many companies included in the ranking. No longer a separate function, environmental protection forms a natural part of daily operations.

In the view of the HUI jurors, this has been achieved especially successfully at the US pharmaceutical group Bristol-Myers Squibb (BMS). Not least thanks to the efforts of its Vice President Thomas Hellmann, BMS is regarded as the rising star of the nineties.

At the heart of its success are the life cycles (LCs) for all product lines, which have been available since 1997. By examining each individual stage in the life of their products, from the composition of ingredients to residual waste handling, mixed BMS teams found over a five-year period numerous ways of improving environmental compatibility and cutting costs at the same time. BMS can save more than US\$ 6.5 million through product and process innovations.

"The life-cycle approach was the right lever for us," Hellmann now acknowledges. He added that because it was interdepartmental and multifunctional, it affected every BMS employee and could be integrated into every business decision.

The proactive: environmental protection as a competitive advantage

These eco trendsetters assume responsibility for the whole life cycle of their products

	Ranking in 1996	Field of business	Environmental policy and goals	Worldwide standards	Internal management	Products	Processes	Information policy	Waste management	Accident prevention	Resuscitation of polluted sites	External activities	Total score
1. Henkel (D)	2	Consumer goods, industrial products, base chemicals	!	!	!	!	!	!	!	!	!	!	398
2. 3M (USA)	3	Consumer goods, health products, base chemicals	○	○	○	○	○	○	○	○	○	○	340
3. Johnson & Johnson (USA)	1	Consumer goods, base chemicals, pharmaceuticals	○	○	○	○	○	○	○	○	○	!	332
4. Bristol-Myers Squibb (USA)	9	Pharmaceuticals, health products, consumer goods	○	○	○	○	○	○	!	!	○	○	328
5. Beiersdorf (D)	new	Consumer goods, health products	○	○	○	○	○	○	!	○	○	○	320
6. Unilever (NL)	8	Consumer goods	!	!	○	○	○	○	○	○	○	○	309

● Poor ● Satisfactory ○ Fair ○ Good ! Very good

Source: Hamburg Environmental Institute

A moving target

Henkel CEO Hans-Dietrich Winkhaus on environmental leadership and profitability

mm *Henkel has emerged as the clear winner in the third environmental ranking drawn up by the Hamburg Environmental Institute. What does that mean to your company?*

Winkhaus We are pleased with this distinction, but our corporate policy is not geared to achieving good ratings. We do what we think is right and important. If that is favorably received outside, all the better.

mm *You made environmental leadership a strategic goal within your company. To what extent has Henkel now reached that requirement?*

Winkhaus It is difficult to define a finishing line. Making a bid for leadership in environmental matters is a moving target. That's why we have closely associated this goal with our economic requirements.

mm *What does that mean in specific terms?*

Winkhaus We are quite clearly not the sort of green company that one-sidedly maximizes environmental parameters at the expense of profits and shareholder value. The relationship between economy and ecology must be balanced.

mm *Environmental requirements have already been very successfully converted into economic success.*

Winkhaus That is correct. Our first success was with the phosphate substitute Sasil in the mid-eighties, which was very well received by consumers. That was an ideal situation in which all sides benefited. Unfortunately, that's

fairly rare. It doesn't work like that in today's detergent business at all. Consumers expect the products to be more effective and environmentally compatible but not more expensive.

mm *In what areas can economy and ecology be better harmonized?*

Winkhaus In safety, for example. Every accident prevented means that high follow-up costs and environmental damage have been averted. Therefore, we have set ourselves a precisely quantified goal of being the world leaders in this area.

mm *How does Henkel put such objectives into practice?*

Winkhaus First of all, the operational business sectors define the product policy taking customer requirements and costs into account. Then the relevant products and processes are developed in close consultation with central research, where supreme responsibility for environmental considerations rests. As a result, these eco aspects are incorporated from the outset. This integration works very well.

mm *What challenges would you like to tackle next?*

Winkhaus Apart from reducing accident figures, as already mentioned, we would like to process more and more renewable raw materials, further reduce our emissions and implement our Safety, Health and Environment standards Group-wide by the year 2001 - while becoming the world champion in terms of profitability.

This is also precisely the task for the future. Following the examination of existing products, the aim is now to scrutinize every new product developed from the cradle to the grave so as to minimize the use of resources.

If Hellmann and his team carry on in this fashion, BMS has the potential to reach the very top. The HUI experts praised in particular the group's eco controlling, which examines thoroughly whether the measures taken are actually bearing fruit.

However, the integration of the eco function into operations has one flaw: many companies can no longer score points with, for instance, spectacular reductions in exhaust gas emissions or wastewater discharges. "The days of huge strides in environmental protection are gone," believes Hanno Henkel, an environmental manager at Bayer, adding that it was now much more a case of taking many small steps toward optimizing environmental performance.

At Bayer, he went on, central investment in the environment had declined, coming instead under the category of "expenditure for new processes and products." Beiersdorf representative Peter Presche also has difficulty identifying his company's innovations, such as "hot melting" for coating adhesive tape, clearly as environmental initiatives: "Of course, the need to cease using harmful solvents did figure in the decision. But the main factor was product benefits."

Just a few years ago, chemical and pharmaceutical companies were very loath to let others take a look behind the scenes, whereas today ISO and EMAS certificates, awarded by inde-

The active: companies with ambitions

Integrating environmental protection into the course of business leads to environmentally more compatible products and processes

Ranking in 1996	Field of business	Environmental protection criteria											Total score		
		Environmental policy and goals worldwide	Standards	Internal management	Products	Processes	Information policy	Waste management	Accident prevention	Resuscitation of polluted sites	External activities				
7. Boehringer Ingelheim Pharma (D)	new	Pharmaceuticals	●	●	○	○	●	!	○	○	○	○	○	○	296
8. Schering (D)	17	Pharmaceuticals	●	●	○	○	○	○	●	○	!	○	●	○	291
9. Dow Chemical (USA)	5	Base chemicals, plastics	●	●	○	○	○	○	○	○	○	○	○	○	291
10. Procter & Gamble (USA)	4	Consumer goods	●	●	○	○	○	○	○	○	○	○	○	○	288
11. Ciba Spezialitätenchemie (CH)	new	Fine chemicals, industrial products, plastics	●	○	○	○	○	○	○	○	○	○	○	○	285
12. BP Amoco (GB)	42/44*	Base chemicals	●	○	○	○	○	○	○	○	○	○	○	○	283
13. Bayer (D)	23	Base chemicals, industrial products, pharmaceuticals	●	●	○	○	○	○	○	○	○	○	○	○	278
14. Dainippon Ink & Chemicals (J)	new	Base chemicals	●	●	○	○	○	○	○	○	!	!	○	○	277
15. Degussa-Hüls (D)	13/15**	Base chemicals, pharmaceuticals, plastics	●	○	○	○	○	○	○	○	○	○	○	○	261
16. Elf Atochem (F)	12	Base chemicals, plastics	○	○	○	○	○	○	○	○	○	○	○	○	261
17. Pfizer (USA)	new	Pharmaceuticals, consumer goods, health products	○	○	○	○	○	○	○	○	○	○	○	○	259
18. BASF (D)	25	Base chemicals, industrial products, pharmaceuticals	○	○	○	○	○	○	○	○	○	○	○	○	258
19. Sankyo (J)	new	Pharmaceuticals	○	○	○	○	○	○	○	○	○	○	○	○	252

● Poor ● Satisfactory ○ Fair ○ Good ○ Very good

Source: Hamburg Environmental Institute
*BP Chemicals/Amoco Chemicals. **Degussa/Hüls.

pendent experts, are regarded as a competitive advantage.

Even contact with environmental groups is no longer a tense compulsory exercise; rather, environmental managers see it as a welcome opportunity to present their own company from a different angle. Environmental rankings offer the chance to compare performance with other companies.

For Elizabeth Girardi Schoen, Director of Environment, Health and Safety at Pfizer, that was the reason to play an active part in the HUI study for the first time: "We wanted to know how we compared with others." Ranked 17th, the pharmaceutical company that enjoyed instant success with its anti-impotence pill Viagra recorded a very respectable showing at its first attempt.

According to HUI's experience, many companies have used the methods employed in the Top 50 study to identify weak points in their own organizations. Back in 1996, for instance, Henkel manager Rüdiger Wagner extracted immediate funds from his management board for external environmental activities using the ranking as a line of argument. In those days, Henkel's lackluster performance in this area earned no more than a "satisfactory" rating from the HUI. This time, the company's environmental sponsorship efforts were awarded a "good" mark.

The friendly tones now adopted by the majority of the industry are sometimes even an embarrassment to HUI head Michael Braungart. Consequently, the threats issued by the British BOC Group that it would reserve the right to take further action if the company were to

appear in the league table come as something of a relief.

Despite all the progress and insights, Braungart would like to continue to keep the chemical companies on their toes. There are still too many weak points and – much more serious – relapses. For example, the former champion Procter & Gamble looks very out of touch these days. "Its once exemplary beginnings in life cycle assessment have gone completely to waste," complains Braungart. Even worse: dangerous ingredients such as formaldehyde, suspected of causing cancer, have returned to some products. As a result, Procter & Gamble fell back to 10th position.

The US pharmaceutical producer Baxter fell even further from 6th position in 1996 to 20th place this year. The HUI did acknowledge the company's

Strong together

How the new BP Amoco became a rising star with the best of both cultures

The shooting star is mistrustful. Moving up about 30 places in three years – cautiously the group's headquarters in London inquires whether other mineral oil and petrochemical groups have done as well? No? The managers at BP Amoco are obviously surprised at their own success.

The American and British partners, merged since the start of this year, have indeed done a great deal since 1996. In particular, internal environmental management, which was virtually nonexistent at BP three years ago and only in its initial stages at Amoco, received good marks from the HUI's experts. But the new oil giant also scored points for its environmental policy, an accident prevention strategy and its external activities: 283 in all, more than twice as many as BP and Amoco achieved last time when operating alone.

So does the mathematical formula of minus times minus equals plus actually work in real life? "Only partially," says Keith Harsham, environment manager at the group's technology center in Sunbury. "But because neither of the two companies had particularly good records, we were able without prejudicing one side or the other to formulate ambitious environmental targets jointly."

Sir John Browne, BP's CEO since 1995 and now the head of the merged company, set a course which was as clear as it was ambitious for the merged health, safety and environment divisions: no accidents, no injuries to persons, and no environmental destruction.

According to Sir John's credo, if BP Amoco wanted to enhance its shareholder value lastingly, there should be no inconsistencies between economic performance and the standards for responsible actions. To the contrary, Browne is convinced that success in both areas is not only important but also mutually strengthening. Even if the zero-mistakes rate is more of an ideal goal – the message has got across.

"With our 'Getting H(ealth) S(afety) E(nvironmental performance) right' initiative we have diagnosed a long list of almost 100 weak points in our various business units," explains environmental expert Harsham. At the same time, the managers of the two groups identified the best practices at BP and Amoco. "They now form," according to Keith Harsham, "an integral part of our HSE toolkit."

The gathered experts then formulated 13 fields of activity for which the head of each busi-

ness unit had to set binding goals as part of his HSE management. Both incompany and external experts check whether the targets are met.

In addition, each of the 126 business units must help to implement the strategic environmental requirements of the group as a whole. The most prominent goal is BP Amoco's pledge to reduce its greenhouse gas emissions by 10 percent below the 1990 level by the year 2010. With carbon dioxide, for instance, the target is almost 36 million tonnes instead of the projected 60 million tonnes, if everything were to continue as before.

The group has now developed a much-noticed system of internal trading of emission rights. Business units that keep their gas emissions below target can sell the unused emissions quota to their less successful colleagues. Each business unit can therefore decide whether it is more cost effective to invest in its own projects or purchase additional emission rights.

Despite these successes, environment manager Harsham is modest: "We know we still have a lot to learn."

The environmental stick-in-the-muds – *The ones that got away*

Their number may be declining but there are still quite a few companies refusing to cooperate with the HUI. They did not reply to the questionnaire, nor was there sufficient information available to provide the basis for assessment. Consequently, ten companies had to be removed from the ranking in 1999:

- | | | |
|--------------------------------|--------------------------|-------------------------|
| ■ American Home Products (USA) | ■ Kao (Japan) | ■ Schering-Plough (USA) |
| ■ Asahi (Japan) | ■ L'Air Liquide (France) | ■ Sumitomo (Japan) |
| ■ Astra Zeneca (Great Britain) | ■ Rhône-Poulenc (France) | |
| ■ Exxon (USA) | ■ Sanofi (France) | |

The reactive: waiting for impetus from outside

The mediocre respond only if something happens, when the public protests or the law is changed

	Ranking in 1996	Field of business	Environmental policy and Goals	Worldwide standards	Internal management	Products	Processes	Information policy	Waste management	Accident prevention	Resuscitation of polluted sites	External activities	Total score
20. Baxter (USA)	6	Health products, pharmaceuticals	○	!	○	●	○	●	○	●	○	○	247
21. Novartis International (CH)	7/40*	Pharmaceuticals, agricultural products, health products	○	○	○	●	●	○	○	!	●	●	238
22. Eli Lilly (USA)	11	Pharmaceuticals	○	○	○	○	○	○	○	○	○	○	235
23. Monsanto (USA)	19	Agricultural products, health products, pharmaceuticals	○	○	○	●	●	○	○	○	○	○	227
24. Hoechst (D)	29	Pharmaceuticals, agricultural products	●	●	○	○	○	○	○	○	○	○	226
25. Norsk Hydro (N)	14	Base chemicals, plastics, agricultural products	○	○	○	○	○	○	○	○	○	○	221
26. F. Hoffmann-La Roche (CH)	38	Pharmaceuticals, fine chemicals	○	○	○	○	○	○	○	○	○	○	220
27. Glaxo Wellcome (GB)	16	Pharmaceuticals	○	○	○	○	○	○	○	○	○	○	217
28. Du Pont de Nemours (USA)	10	Agricultural products, plastics, fibers	○	○	○	○	○	○	○	○	○	○	214
29. EniChem (I)	new	Base chemicals	○	○	○	○	○	○	○	○	○	○	211
30. Showa Denko (J)	24	Base chemicals	○	○	○	○	○	○	○	○	○	○	209
31. DSM (NL)	26	Base chemicals, pharmaceuticals	○	○	○	○	○	○	○	○	○	○	201

Poor
 Satisfactory
 Fair
 Good
 Very good

Source: Hamburg Environmental Institute
 *Ciba-Geigy/Sandoz. **Joint venture with Schering

very good performance in implementing worldwide standards but because virtually nothing else had changed at the company, this was not enough to prevent its slump from the heights of the top ten into mediocrity.

Braungart and his team have been following the situation after numerous giant mergers in the chemical industry with mixed feelings. In the best cases, the newly-weds use their union for a passionate new beginning such as at BP Amoco.

However, in the confusion of the merger, the positive beginnings at one partner can also perish, as happened at Novartis. The HUI's harsh verdict says it all: "Sandoz's catastrophe culture has prevailed over the environmental perestroika espoused by Ciba-Geigy."

On the other hand, the good practices of the former parent company have been preserved and further developed at Ciba's specialty chemicals arm, where environmental principles have been purposefully integrated into product development. In order to make further progress, however, the company had to shed some problem products, such as certain textile chemicals and printing inks. Given this restricted performance, it reached 11th place. The parent company Novartis, on the other hand, has to be content with 21st, a poor reflection on a life sciences group. Another criticism from the HUI is that a chemical company's foreign subsidiaries do not always comply consistently with the parent company's stringent standards, especially in newly industrialized countries. This carelessness, for instance in China, was one of the main reasons why Johnson & Johnson lost its leading position.

The Americans vow to improve: "We are currently making strenuous efforts especially in China," notes Karl Schmidt, Vice President Environmental Affairs at Johnson & Johnson, and presents as tangible proof his company's environmental guidelines translated into Chinese. The next few years will show whether that is enough.

Yet the HUI is far from satisfied. Following the introduction of management systems and improved processes, the products really should now become environmentally compatible, urges HUI head Braungart, adding that all too often groups such as Dow Chemical had optimized existing procedures only to fail ultimately to scrap problematic products such as chlorine-based chemicals. Braungart is therefore demanding that in future companies should be not eco-efficient but eco-effective.

The concept of eco-efficiency developed by the World Business Council for Sustainable Development is aimed at steadily reducing the consumption of energy and resources per value-added unit realized. In Braungart's view, this approach is limited. The idea of eco-effectiveness that he supports, on the other hand, calls for separate and self-contained cycles for completely and harmlessly biodegradable products and for so-called industrial products, whose residues can be largely recycled.

We have moved closer to the goal of environmentally compatible economic management, the third HUI ranking concludes. The "ecological footprint" of many chemical companies has become less deep but remains far from invisible. "Every weak point," says Wolfgang Gawrisch, Henkel's head of research and thus its environment supremo, "is an incentive for us to improve even further."

Points decision

How the environmental performance of companies is assessed

In January of this year it was time again. The Hamburg Environmental Institute (HUI) sent the Top 50 questionnaires out to the world's largest chemical concerns. Compared with the previous round, little had changed on the checklist. The HUI specialists had put some formulations more precisely, expanded a few questions to include current developments but not changed the overall weighting compared with its 1996 predecessor.

Those surveyed had to answer 54 question sections, some of which included numerous sub points. The aim was for the chemical companies to describe their activities through self-assessment with zero points for doing nothing to five points if a particular environmental practice was part of day-to-day business and being continually improved. However, every such claim had to be backed up by the relevant company documentation. The information was also checked again by HUI staff. A total of 500 points could be scored in ten categories:

1. Environmental policy and goals (50 points): Is there a defined company policy on environmentally compatible management with measurable goals?
2. Worldwide standards (50 points): Is global production conducted in accordance with the same requirements?
3. Internal management (75 points): Who is responsible for environmental protection in the company? Do environment managers have access to all the relevant information? How are employees involved?
4. Products (75 points): How environmentally compatible are the company's products? Are environmental features taken into consideration in new products?
5. Processes (75 points): What is the company doing to conserve resources in production?
6. Information policy (50 points): Are all product ingredients declared? How is the public kept informed?
7. Waste management: What does the company do to avoid waste? Are used products and residues taken back?
8. Accidents (25 points): What accident prevention measures are taken?
9. Resuscitating polluted sites (25 points): Is there a repair program? What is being done to prevent contamination in future?
10. External activities (25 points): Are environmentalists and other environmental initiatives supported?

A modern formula

How environmental performance affects shareholder value

Since environmental protection became an economic factor, managers and investors are increasingly asking whether high investment in environmental protection and shareholder value can be compatible. First you need economic success and then you can afford more elaborate environmental protection, say some. Others believe that the calculation is the other way round: only those who invest in environmental protection can enhance shareholder value as well. It is the old story of the chicken and the egg. Who is right?

In order to find out, the investment management company Sustainable Asset Management (SAM) from Zurich compared six leading environmental companies from the HUI ranking (3M, Johnson & Johnson, Bristol-Myers Squibb, Dow Chemical, Procter & Gamble and Pfizer) with six groups which have done little for environmental protection (Chevron, Eastman Chemical, Merck, Colgate-Palmolive, PPG Industries and Mobil Oil).

In a backtracking exercise from June 30, 1994, to June 30 of this year, the Swiss company followed the movement of the total stock yields of the two groups (changes in the stock price plus dividends). SAM concentrated on American companies in the study so as to minimize the impact of such external factors as exchange rate fluctuations, macroeconomic and other stock exchange-specific variables, for instance, a particular market mood.

The results seem clear. Within five years the portfolio of environmentally leading companies shows stock growth of 318.8 percent compared with 193 percent among the slackers (see chart below). That means a higher annual return of 9.2 percent with only a slightly higher risk. Anyone who had invested one million marks in the eco leaders would have been 1.24 million marks richer than making the same investment in the loser portfolio.

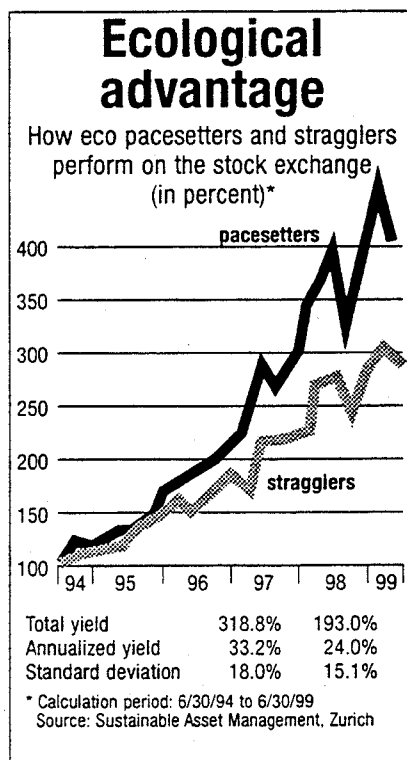
Nevertheless, Alois Flatz, research specialist at SAM, warns against jumping to conclusions. The better performance by the ranking's pacesetters was especially due to the strength of the disproportionately represented pharmaceutical stocks whereas the weaker oil stocks were positioned in the bottom third.

"Nonetheless," Flatz notes, "it is certainly no accident that the showing of oil companies based on the same criteria is so much poorer in the Top 50 study."

From the point of view of financial analysis, however, it is ultimately insignificant whether successful companies can afford higher environmental spending or whether increased environmental efficiency leads to greater economic success, he went on. Rather, crucial to the assessment of future success in Flatz's view is the reliability of the sustainable corporate management indicator, which is frequently underestimated.

Therefore, SAM has developed an ingenious set of tools with which its asset managers can analyze apart from environmental risks and costs the scope for innovative products and processes. The yield-risk profile looks much better with so-called sustainability portfolios. This ought to be of interest especially to investors with a medium- to long-term investment outlook.

Apart from innovative asset managers such as SAM, an increasing number of traditional companies are recognizing these opportunities. For instance, the Swiss UBS is now offering eco performance funds, under the motto: twice the prosperity, half the consumption of natural resources.



The passive: moving only when forced to do so

The weak links in virtually all areas are eclipsing progress in formulating worldwide standards

	Ranking in 1996	Field of business	Environmental policy and goals	Worldwide standards	Internal management	Products	Processes	Information policy	Waste management	Accident prevention	Resuscitation of polluted sites	External activities	Total score
32. Mitsubishi Chemical (J)	new	Base chemicals, industrial products, agricultural products	○	○	○	●	●	●	●	●	●	●	192
33. Union Carbide (USA)	18	Base chemicals, plastics	○	○	○	○	●	●	●	●	●	●	189
34. Abbott (USA)	new	Pharmaceuticals, health products	○	○	○	●	●	●	●	●	○	○	186
35. SmithKline Beecham (GB)	30	Pharmaceuticals, consumer goods, health products	○	○	○	●	●	●	●	○	○	○	182
36. ICI (GB)	31	Base chemicals, industrial products	○	○	○	●	●	●	●	●	●	●	181
37. Toray Industries (J)	21	Base chemicals, plastics	●	○	○	○	○	○	○	○	○	○	179
38. Shell Chemicals (NL)	27	Base chemicals, plastics	○	○	○	○	○	○	○	○	○	○	178
39. Solvay (B)	34	Base chemicals, pharmaceuticals	○	○	○	○	○	○	○	○	○	○	176
40. Warner-Lambert (USA)	new	Pharmaceuticals, consumer goods	○	○	○	○	○	○	○	○	○	○	173
41. Chevron Chemical (USA)	32	Base chemicals, plastics	○	○	○	○	○	○	○	○	○	○	166
42. Eastman Chemical (USA)	33	Base chemicals, plastics	○	○	○	○	○	○	○	○	○	○	153
42. Merck & Co. (USA)	43	Pharmaceuticals, fine chemicals, health products	○	○	○	○	○	○	○	○	○	○	153
44. Clariant (CH)	new	Industrial products, fine chemicals	○	○	○	○	○	○	○	○	○	○	149
45. Akzo Nobel (NL)	36	Base chemicals, pharmaceuticals, fibers	○	○	○	○	○	○	○	○	○	○	147
46. Montedison (I)	35	Base chemicals, pharmaceuticals, agricultural products	○	○	○	○	○	○	○	○	○	○	144
47. Colgate-Palmolive (USA)	47	Consumer goods	○	○	○	○	○	○	○	○	○	○	141
48. PPG Industries (USA)	37	Industrial products, base chemicals	○	○	○	○	○	○	○	○	○	○	137
48. BOC Group (GB)	45	Industrial gases, health products	○	○	○	○	○	○	○	○	○	○	137
50. Mobil (USA)	39	Base chemicals, plastics	○	○	○	○	○	○	○	○	○	○	133

● Poor ● Satisfactory ○ Fair ○ Good ○ Very good

Source: Hamburg Environmental Institute