SCIENCE AND ENVIRONMENT FORTNIGHTLY

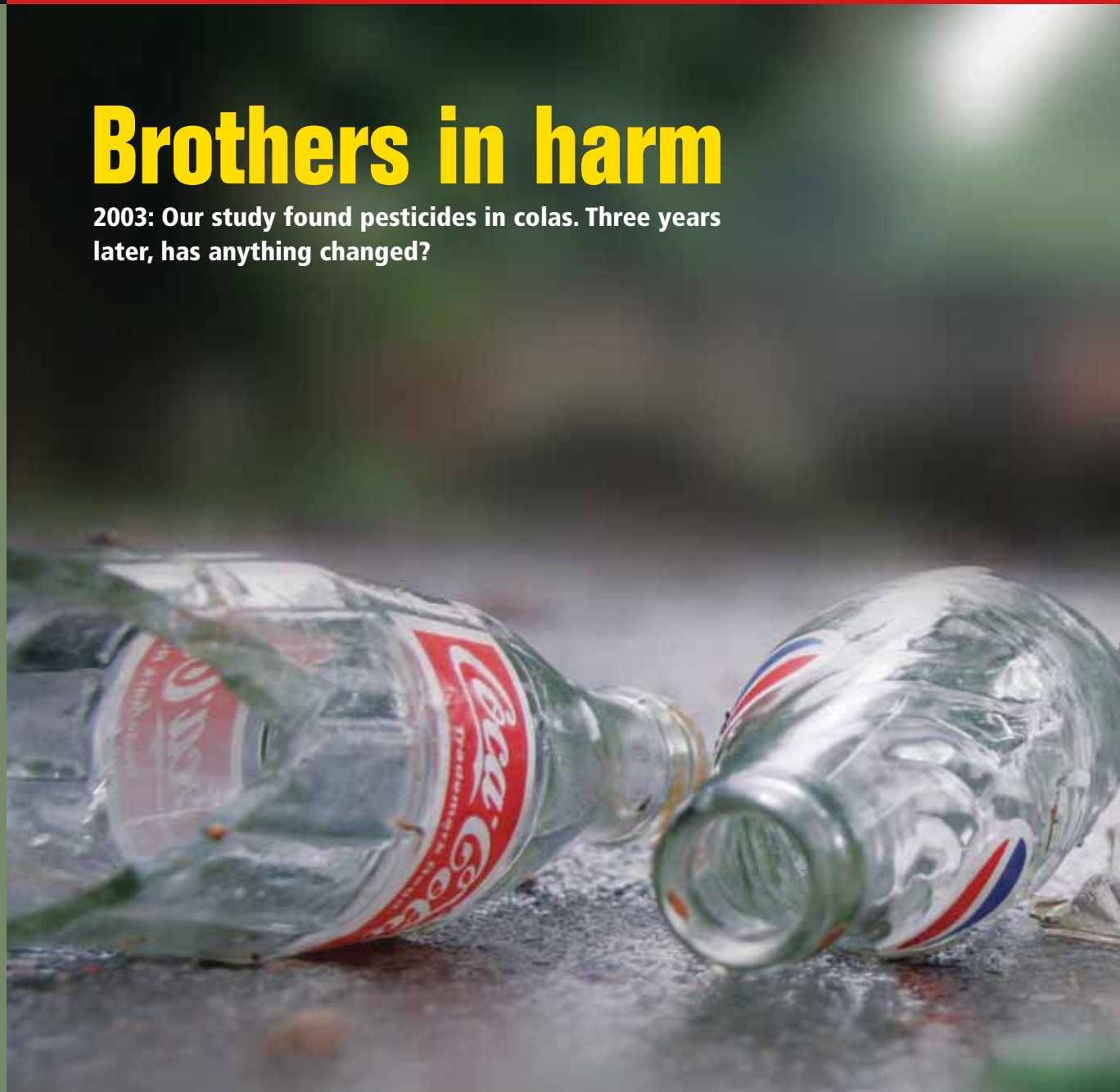
AUGUST 15, 2006

Down To Earth

Rs 20.00

Brothers in harm

2003: Our study found pesticides in colas. Three years later, has anything changed?



Rhinos not in short supply

Debate on cotton's underbelly

Essar's gambit does not convince

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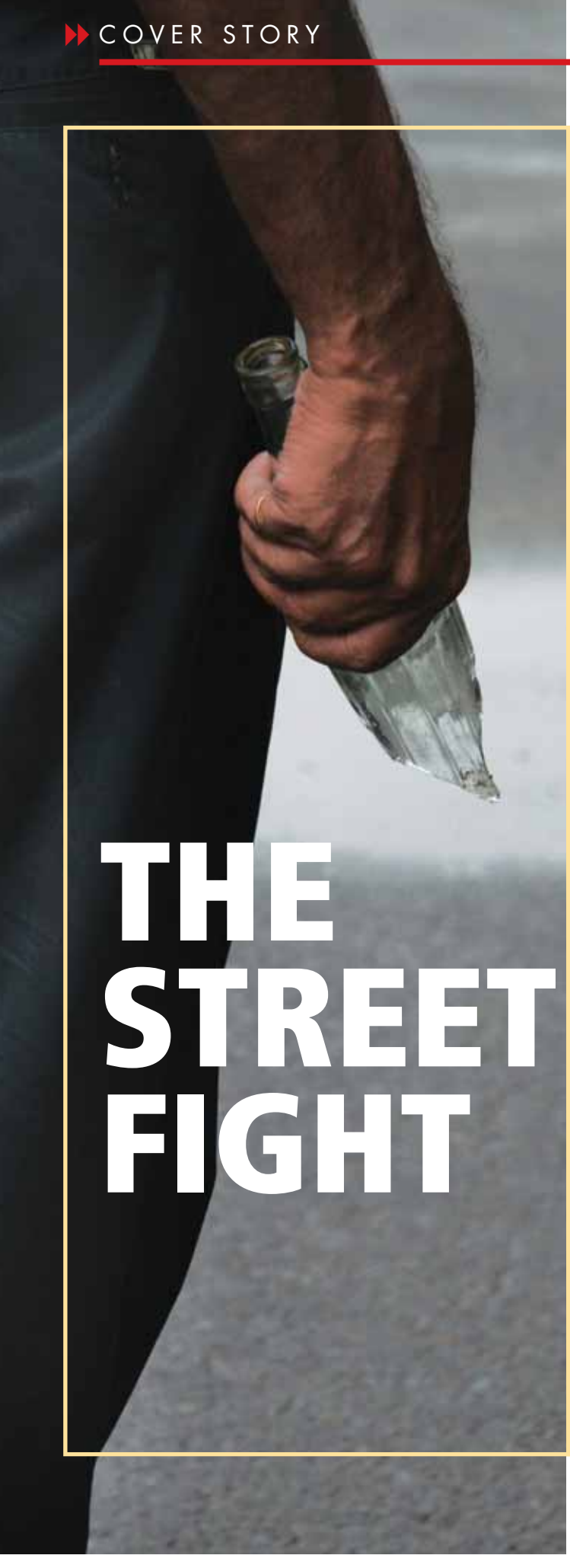


THE STREET FIGHT

Our world changed a little when we published the study on pesticide residues in soft drinks. In the work we do, fights go with the territory. We need to challenge institutions — government and private — in the public interest. What we had not anticipated, however, was the sheer power and the virulence of the attack. The fact is that the two companies affected — Coca-Cola and PepsiCo — were incidental to our story on pesticide contamination and the need for food standards to regulate safety. The fact that two US multinationals were involved was a mere coincidence. But not for them.

The first attack was on our laboratory — they questioned the data analysis, our capabilities, our equipment and then as it got nastier, they resorted to personalised attacks on us and our integrity. Their favourite ploy was to dismiss us as a pawn in a conspiracy hatched by Europe (because we get funds from multilateral and bilateral agencies) to destroy the good name of US companies. But this was not all. We heard rumours of phone calls from Colin Powell, then US secretary of state, to the prime minister's office. We heard of Washington DC-based high-priced lawyers (lobbyists) flying down to cajole the powers here. We heard of intense activity in corridors in which we have no place.

We sensed the tables had turned against us. We knew when we had visits from the grey-clad men from the Intelligence Bureau to check on us. We knew when we were asked to submit to the government data on 20 years of accounts, 20 years of our funding data, 20 years of detail on every staff member who has worked with us, along with their addresses. The strategy, we knew, was to trip us — somehow. The final straw came when the *swadeshi*-oriented health minister Sushma Swaraj of the National Democratic Alliance government took their side. We say this not because of the study she ordered to check our data, not because of her statement in parliament regarding the study of two scientific institutions and the variation in data gathered by them and us. We say this because she carefully crafted her speech to sneak in the phrase "within safety limit". In other words, the drinks were safe. A clean chit had been given.

Three years have passed since the day we released excise duty on soft drinks in this year's budget. The were blocked by powerful interests in the governm

We also say this because she drafted the terms of reference of the Joint Parliamentary Committee (JPC) that investigated the matter to turn it into an enquiry against us. The 15-member JPC was to investigate if the "recent findings of the Centre for Science and Environment (CSE) regarding pesticide residues in soft drinks are correct or not". In other words, we were in the dock, not the cola companies. The rest is history. The JPC was created to bury us, but it ended up vindicating our study. It endorsed our position that the country needed health-based standards for food and water security (see 'Democracy must be worked at', *Down To Earth,* February 29, 2004).

What after that?

We Indians are a cynical lot. Perhaps we have reason to be. We believe that little will be done, nothing will really improve and that the rich and powerful will get away with murder (in a man-

ner of speaking). It is not all that wrong as well. Take the cola-pesticide wars. The story may have inspired a Bollywood movie — *Corporate* — but it has done little else. Even as the JPC was deliberating on its report, the two cola giants launched perhaps the biggest ad blitz in the country. Top stars, from Aamir Khan to Shahrukh Khan, were hired to reassure us that the drinks were safe. They mocked our study. They derided our message of safety. They danced and sang to seduce us to go back to colas. But that is their job. They are paid actors. The problem was that the regulator — the government — abdicated its role.

Three years have passed since the day we released our study. The market for colas, we are told, has recovered from the pesticide-controversy blip. The government of the day is favourably inclined towards promoting this habit. In this year's budget, an excise duty cut has made the cola giants more profitable. The market is looking up. We have no complaints.

But where we have a bone to pick is that even as the drinks are back in our homes, nothing has been done to implement the recommendations of the JPC. The standards that needed to be set to regulate their safety have been lost in committees or blocked by powerful interests in the government. The cola-pesticide issue has become one more action-not-taken story.

What now?

But battles, as we said, go with our territory. We are dogs with a bone — we won't give up. The reason is not egoism or arrogance. The reason is simple: we believe in this nation's democracy. For the past three years, we have worked within the system to discuss and formulate safety standards for these products. We have worked with the process. We have found it works. We found in this process that the integrity of top scientists could not be compromised. But we also found that the process could easily be manipulated by the bureaucracy.

This is why we are taking this issue back to you. We are releasing the study — Coke-Pepsi-Pesticide II — so that you who are wooed by the companies can exercise your choice.

r first study on pesticides. The government reduced arket is looking up. But the standards recommended . The CSE team presents the inside story

Our reason is simple: if soft drinks contain a cocktail of pesticides above stipulated standard, they are unsafe. The companies say there are no stipulated standards. The reason is simple: they don't allow standards to be formulated. The companies say milk and vegetables have more pesticides than colas. But milk and vegetables also have nutrition. They give us something in this poison-nutrition trade-off. We get nothing with colas. Just pesticides. Harmful and deadly.

As we write this, we don't know how we will be attacked this time. We are sure, given past experience, that it will be vituperative and powerful.

We don't know if we will survive. But we know that the issues we are concerned with will gain strength. They are too important to be knocked around by a few companies, even if they are the world's most powerful ones. These issues concern our bodies. Our health. ■

SOFT STAND

Private interest rules public roost

On March 29, 2006, the Drinks and Carbonated Beverages Sectional Committee or FAD 14 of the Bureau of Indian Standards (BIS) was meeting in New Delhi. For the past 20-odd meetings, held over the past three years, the committee had deliberated on the standards for carbonated beverages. When it last met in October 2005, at the Defence Food Research Laboratory, Mysore, the committee had finalised standards. At the March meeting, the committee was asked to re-confirm its decision.

Even as the meeting began early morning, a letter was presented to the committee. The letter, dated March 29, 2006 — the date of the meeting — written by the secretary of the Union ministry of health and family welfare, to the secretary of the Union ministry of consumer affairs, asked BIS to defer setting standards. The health secretary wanted this done because he said that a national-level expert committee on pesticide residues in sugar was to meet shortly to discuss its interim report. It also wanted more data to be collected on other parameters — caffeine, pH — before standards could be set. What he did not say was that this committee had been set up after the JPC report over two years ago and that it was still only considering preliminary findings and that his ministry had not set a time period to finalise standards.

Perhaps not too oddly, this letter, which parroted the position of industry, was timed so strategically. Its value to the attempts of soft drink majors to stall standards was immense. But what was bizarre was that the letter was dated March 29, which meant that the health secretary must have dispatched it on the day of the standard-setting meeting, and with amazing speed it cut through all government channels to reach the desk

of the secretary, consumer affairs, to be routed to the BIS headquarters some 5-6 km away. And completely inexplicable was the soft drink companies' knowledge about not just the existence but also the contents of the letter. But then the stakes were high.

For the past three years, soft drink companies and their industry associations had fought tooth and nail against setting up a final product standard. In August 2003, when CSE had released its findings on pesticide residues in soft drinks, it had made one fact clear: there were no standards for the quantity of pesticides allowed in the soft drinks and that these products worked outside the ambit of the regulators. The JPC endorsed CSE's scientific analysis and directed that standards should be set. The objective was clear: to set final standards and to regulate the product for public health.

Since then, two processes have been underway. One was driven by the health ministry. In 2004, it had set standards for the quality of water which would be used in the manufacture of soft drinks. But this did not address the quality of the final product. Worse, it left open the issue of how the inspectors would enforce this standard since it would require checking not the soft drink, but the water used to manufacture the beverage in each plant.

In this process, the final product standard, deliberated since February 2004, remained mired within committees and their sub-committees. In early 2004, the ministry's central committee on food standards agreed to refer the matter to its pesticide residue sub-committee, which would examine the pesticide content in sugar, the other constituent of soft drinks. In October 2004, the sub-committee decided to hand over this decision to an expert committee. The expert committee, in turn, decided to collect sugar samples from different parts of the country to analyse pesticide content. Ministry officials say the report, due in April 2006, is only a pilot study and will be used for more detailed analysis and study. The health ministry has no time frame for setting the final standard.

The second process is driven by BIS, an autonomous institution under the department of consumer affairs, mandated to set and review standards for products in the country. BIS had an existing voluntary standard for carbonated beverages, which was up for its mandatory five-year review. This standard did not regulate pesticide residues. Directed by JPC, BIS's standard-setting committee decided to work on reviewing and finalising the standard, taking into account new health imperatives. The committee included representatives of all interested parties — cola majors, the bottled water industry, industry associations, food and nutrition scientists, and consumer and environmental groups. It had, after months of deliberation, come to the point of finalising the standard, which was demanded by consumer and environmental groups and opposed by soft drink companies. The opposition was out in the open. They were determined to make sure the committee did not set the standard, using every possible ruse to prevaricate and delay. The game was nearing touchdown. ■

SUBSTANDARD

THE EXCUSES

Sugar: Companies say there are pesticides in sugar. They want a study on how much and standards to be set on the raw material and not on the final product. They say they are only the hand that 'mixes' the ingredients

Soft drinks contain two key constituents — roughly 89 per cent water and 10 per cent sugar. The rest of the 1 per cent is made up of a secret ingredient and carbon dioxide. This is what the companies told JPC. With standards for water set, the question to resolve was the amount of pesticide residues contributed by sugar, so that the final product standard could be set. This issue was brought to JPC where the health ministry (now devising lengthy studies) had deposed that "the pesticide residue in sugar and the quantity of sugar used in soft drinks is so small that it is not likely to increase the pesticide residue in the final product". Soft drink companies also told JPC in written submissions that they had a fool-proof system of procuring high-quality sugar and a system to treat the sugar syrup by a hot carbon process during which pesticide residues are elim-

Sugar and spice

The health ministry's pesticide residue sub-committee was entrusted the job of fixing a pesticide residue standard for soft drinks. The committee, in March 2004, called "stakeholders" for discussions. Interestingly, for this health ministry sub-committee the only worthy stakeholders were industry. Of the 21 invited, only five responded and only two made written submissions. The five who made presentations were Coca-Cola India, PepsiCo India, the Indian Soft Drink Manufacturers Association (again represented by PepsiCo India), the International Soft Drink Council, All India Food Processors Association and Kali Aerated Water Works — the only domestic company. Of these, only two submitted their written views to the sub-committee, namely Coca-Cola India and PepsiCo India, whose drinks were found by JPC to have high amounts of pesticide. The committee then decided on its course of action: to undertake a year-long nationwide monitoring of soft drinks for presence of pesticide residues. Even more telling is the fact that the committee has asked for analysis of raw sugar samples, when it knows that companies use refined sugar, which in turn goes through processes that clean it for residues. But the health ministry wants to play sugar daddy. Delaying the process using "good science" is the name of the game.

Unhealthy moves from health ministry. When a committee of the Bureau of Indian Standards met to finalise standards for colas, it got a missive from the health secretary to cease and desist. The majors knew about the letter and its contents. We call it collusion, by any name

There is a logic of obfuscation in what soft drink majors say. They want to put the blame for pesticide residues on raw materials. But the fact is that public health is the issue. Where harmful chemicals are coming from is not the point: the point is they should not be there

Sharp practice

The current Indian standard for caffeine in soft drinks is lenient — up to 200 mg/l is permitted. There are no standards for pH in the drinks. Global standards differentiate between cola (brown drinks), where caffeine is added as an ingredient, and white drinks, where caffeine is merely an ingredient for addiction. Global standards also stress the health concerns for caffeine use and companies manufacture products which are caffeine-free.

But in India, this best practice is not accepted. Companies bung in caffeine into white drinks — Mountain Dew, a Pepsi product, which has captured the market, for instance, contains caffeine. They do not want to manufacture caffeine-free versions. They say: "Indians have not asked us." They continue to say tea and coffee has more caffeine, not recognising that children don't drink tea but guzzle soft drinks.

The existing standard has no scientific basis. But when the question of revision came up, keeping in mind best practice, companies managed to persuade the health ministry to undertake long-term studies before it finalised change. On the other hand, the BIS committee took cognisance of all scientific information and best practices of different countries to evolve its standard. It set a standard of 145 mg/l of caffeine in brown colas and asked for labels on the product to ensure that people's health was not compromised. This standard, the committee felt, could be further revised when long-term health studies were available.

The pH of a product determines its health impact. The health ministry told parliament that "pH below 2.5 could cause irreversible and extensive damage to the human epithelium". Soft drink manufacturers maintained that there was no global precedence for a pH standard. This was not true. South Africa includes pH in its standards. Data was collected on pH of different drinks. Based on all this, the standard for pH was fixed at 2.5 and above. Companies were furious.

inated. JPC asked them to submit data, which they did. This data showed little presence of pesticides in sugar. It was for two samples tested by the Hyderabad-based VIMTA Labs in October 2003. On the basis of this evidence, JPC asked for the final product standard to be formulated.

But cola companies made veiled threats of importing sugar if the final product standard was pursued. The sugar issue came to BIS. In July 2004, both PepsiCo and Coca-Cola wrote to top officials of the department of consumer affairs complaining against BIS officials. They claimed they had proof that "confirms the presence of pesticide residues in sugar available in India" and wanted this to be taken into account. The standards committee, when it met next, asked the companies to submit their evidence. The companies submitted the data for the same two samples it had given to JPC many months ago.

A careful scrutiny of this data showed that in all samples pesticides were below the 1 part per billion (ppb) level. More data was called for. Two more sugar sample data was given by companies to the committee. But the analysis was the same: tests done by the Netherlands-based TNO labs in February 2004 and the London-based Central Analytical Lab, earlier in September 2003, detected negligible pesticide residues. But the companies were still not satisfied. More data was called for. In early 2005, the Hyderabad-based National Institute of Nutrition submitted data on pesticide residues in sugar. Analysis of 11 samples showed no presence of pesticide in sugar.

But this was not sufficient. Even more tests were called for. In October 2005, VIMTA Labs submitted data for 135 samples, which they tested for 50 pesticides. Their analysis revealed the contribution of sugar to the pesticide content in the final soft drink was well below the draft standard of 0.1 ppb for individual pesticide and 0.5 ppb for total pesticides.

It was further pointed out that these tests were done on raw sugar. Both PepsiCo and Coca-Cola had submitted to JPC that they treated sugar through a hot carbon process, which reduced the pesticide content further. Based on this information, the committee decided to finalise the standard. It agreed that the standard for pesticide residues in water should be mandated for the final product.

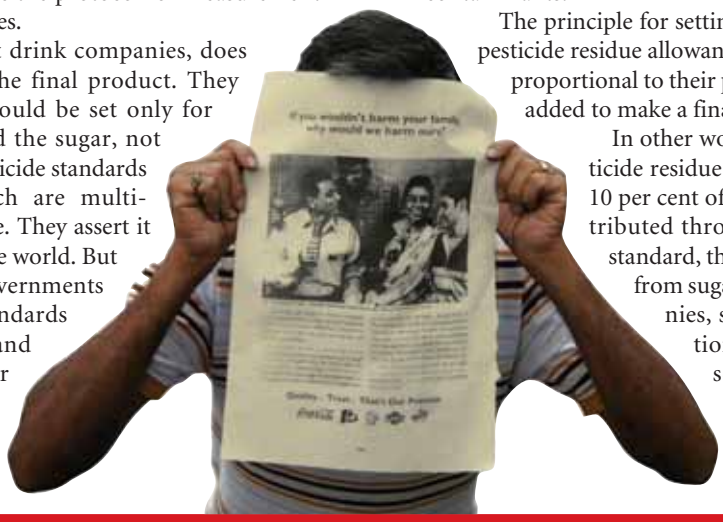
COMPANIES SAY

Their final product cannot be tested because it has a complex matrix. They say standards are never set for the final product, only the raw material

Water and sugar make up soft drinks, which is hardly complex. Globally, governments test routinely for contaminants at sub-ppb levels for all products sold to consumers — from baby food to tinned food. In fact, governments test the same soft drinks for pesticide residues in different countries. In India, government laboratories tested soft drinks to check their pesticide residues. Ironically, the two soft drink majors also tested their product to prove their safety. One company used the results of the London-based laboratory to give itself a clean chit. How do the companies know that their product is 'safe' if it cannot be tested?

Top analytical chemists in the country discussed this issue in the BIS committee. Their unanimous view was that methods to test soft drinks exist and that, after the standard was finalised, BIS would prepare the protocol for measurement to be used by all laboratories.

Industry, not just soft drink companies, does not want standards for the final product. They believe that standards should be set only for constituents — water and the sugar, not the beverage. They say pesticide standards for final products, which are multi-ingredient, cannot be done. They assert it is not done anywhere in the world. But the facts are different. Governments have pesticide residue standards for cereal-based food and infant food, for butter, for cheese and even ice-cream. Governments are learning they need to work at both ends — standardise maximum residue levels allowed on the raw materials as well as on the manufactured foods, so that industrial units can adopt technologies for cleaning up contaminants.



The principle for setting standards is obvious: the pesticide residue allowances of different ingredients, proportional to their presence in the product, are added to make a final product standard.

In other words, 89 per cent of the pesticide residue water standard is added to 10 per cent of the pesticide residues contributed through sugar. In the final BIS standard, the data on pesticide residues from sugar, presented by the companies, showed that this contribution would be negligible and so, the water standard for pesticide residues, which is 89 per cent of the product, was adopted. ■

Standard spiel

Company-government reasons	Why they don't make sense
• Sugar standard has not been set so pesticide residue of final product cannot be set	• Tests done by labs, including company-sponsored analysis, show that refined and processed sugar, used in the product, do not contribute significantly to the residues
• Product is complex and cannot be tested for pesticides at sub-ppb level	• Testing is routinely done across the world for pesticide residues in soft drinks. Companies also tested products in laboratories to claim they are safe
• Final product standard cannot be set for pesticide residues. It is not done anywhere in the world	• It is true that western governments have not set standards for pesticide residues in soft drinks. But they have set standards for pesticide residues in other, more complex multi-ingredient processed foods
• Standard should not be set until the ministry of health committee and its sub-committees finalise their reports. The health ministry was not consulted	• It has been over two years since the committees of the health ministry were set up, with no outcome and no final date. The committee is examining the issue of pesticide residues in raw sugar, when there is data available for over 150 samples, showing that sugar does not contribute to the pesticides in the final product. The committee is also looking at raw sugar, while companies use refined sugar, which undergoes further treatment and so purification. It is also not correct to say that the health ministry was not consulted. The BIS committee included its officials. At all times letters were written asking for advice and information, but no response was received
• The government cannot set the standard because the Supreme Court is listening to a case on health issues of soft drinks. The matter is sub-judice	• In this same case, the government has informed the Supreme Court that it should not concern itself with the matter, as BIS is in the process of finalising standards for final quality, which will take into account health imperatives
• The BIS standard will be in conflict with the mandatory standard, set under the Prevention of Food Adulteration Act	• The act does not have final product standards for pesticide residues in soft drinks. It only includes standards for water used in manufacture of the product. There is no conflict
• Standard cannot be set because companies do not agree	• If this contention is accepted as the basis for regulation, then standards for public health can never be set

ACTION NOT TAKEN

The 13th meeting of the FAD-14 BIS committee was in session. The letter of the health secretary had been tabled. Discussion was heated. Finally, the meeting decided to reconfirm the standard for carbonated beverages. The standard was ready for notification.

But then, mysteriously, things began to happen. The BIS website noted in its progress of work that the standard (IS 2346) "has been finalised but not yet ready under print". In other words, finalised but not been notified. A few weeks later, even this mention was erased. BIS officials maintained a stony silence. Investigations by *Down To Earth* point to a letter written by officials of the department of consumer affairs to the director-general of BIS questioning why the standard was set in "such a rush". The letter questioned why BIS was setting the standard when the health ministry had raised objections. It conveyed its unhappiness about the way the matter had been handled by the bureau and wanted it to stop its work on setting the standard.

In other words the standard, set after over 20 meetings, discussed by key experts concerned with food and nutrition and endorsed by consumer and environmental groups, was to be dropped. All because soft drink companies (and the health ministry) wanted it so. Ironically, the final nail in the coffin of the health-based standard came from the department of consumer affairs — mandated to protect the people's interest. Even more ironically, the minister of consumer affairs happened to be the chairperson of the JPC that had directed the government to set the standards in the first place. "The reason that other countries have not fixed such limits should not dissuade our lawmakers in attempting to do so, particularly when vulnerable sections of our population who are young and constitute a vast national asset consume soft drinks.

"In JPC's view, therefore, it is prudent to seek complete freedom from pesticide residues in sweetened aerated waters. 'Unsafe even if trace' should be the eventual goal", was the verdict.

No labels

A Rajasthan High Court order had directed that while the issue of what was safe and not safe was debated, "consumers should be given the entire information about the contents of the beverages for exercising informed choice". The court directed PepsiCo and Coca-Cola and all other manufacturers of carbonated beverages and soft drinks to disclose the composition and contents of their products, including the presence, if any, of pesticides and chemicals, on the bottle, package or container, as the case may be. But the order has not been implemented.

Protecting corporations

The Planning Commission homepage includes on it a link to the report of the US-India CEO Forum. The members of the group included the head of PepsiCo, so it is no surprise that carbonated beverages got special mention. The government was directed to eliminate policies such as the discriminatory special excise duty on carbonated drinks (which it promptly complied with). It was also directed to "deflect unreasonable allegations made against the beverage industry by establishing internationally accepted, science-based safety standards for the entire food and beverage sector".

But good science is clearly a tool for the unwilling. The companies do not want the standard. They will say that it is not "science-based". The BIS standard-setting process includes top scientists and is used to set standards for all products. The process has not been compromised. But industry's interests may have been. Now the ball is in the government's court. The ball is also in the court of companies. Have they cleaned up their act? Are their products now safe? ■

STILL UNSAFE

FORGET AAMIR KHAN'S ASSURANCES

The Centre for Science and Environment's Pollution Monitoring Laboratory tested 57 soft drink samples of 11 soft drinks brands. Journalists and researchers travelling for stories collected samples from different states and cities of India — bought bottles from Burnihat in Meghalaya, Bharuch in Gujarat, Palakkad in Kerala to Jalandhar in Punjab. Unlike the 2003 pesticide in soft drink study, when 36 samples from Delhi were procured, these samples are from 25 different soft drink manufacturing plants spread over 12 states

Brand	Number of samples	Alpha-HCH (ppb)	Beta-HCH (ppb)	Lindane (ppb)	Delta-HCH (ppb)	HCH total (ppb)
Pepsi Cola	14	1.07	0.02	6.51	0.77	8.36
Pepsi Caffechino	1	0.00	0.00	1.48	0.25	1.73
Mountain Dew	1	0.00	0.00	2.71	0.55	3.26
Mirinda Orange	7	0.09	0.00	5.70	0.76	6.55
Mirinda Lemon	1	0.00	0.05	6.40	0.27	6.72
Duke Lemonade	1	0.00	0.00	5.56	1.20	6.75
7 Up	3	0.00	0.15	4.72	0.53	5.40
Average - PepsiCo brands	**28**	**0.56**	**0.03**	**5.76**	**0.71**	**7.06**
Coca-Cola	14	0.43	0.00	5.43	0.90	6.76
Thums Up	5	0.43	0.00	6.07	0.93	7.43
Limca	6	0.00	0.00	3.08	0.92	4.00
Fanta	4	0.00	0.04	4.76	0.36	5.16
Average - Coca-Cola brands	**29**	**0.28**	**0.01**	**4.99**	**0.81**	**6.08**

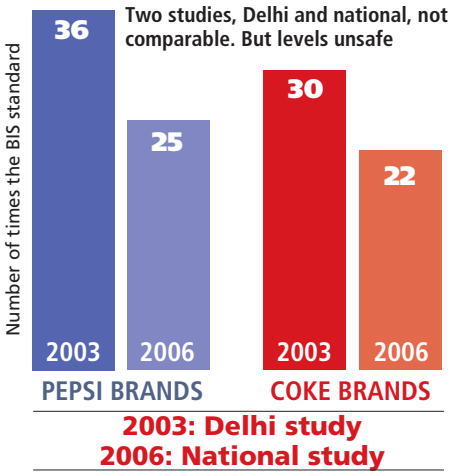
The results:

- Pesticide residues found in **all** soft drink samples
- A cocktail of **three** to **six** pesticides found in all samples
- Lindane — a confirmed carcinogen — was found at an average concentration of 5.5 ppb, which is **54 times higher** than the BIS standard (finalised but not notified) for individual pesticides in soft drinks (0.1 ppb)
- In one sample of Coca-Cola bought in Kolkata, lindane was as high as 14 ppb, which is **140 times** higher than the BIS standard
- Chlorpyrifos, a known neurotoxin also known to breach the placenta, was found in all samples at an average concentration of 4.8 ppb, which is **47 times higher**
- A Coca-Cola sample bought in Mumbai, manufactured in Thane, contained 20.4 ppb of chlorpyrifos: this is **200 times higher** than the BIS standard for an individual pesticide
- Heptachlor, banned in India, was found in 71 per cent of the samples, at levels which are four times the BIS standards
- The average amount of pesticide residues found in all samples was 11.85 ppb, which is **23 times** higher than the BIS standards for total pesticides in soft drinks (0.5 ppb)
- Pepsi Cola, the flagship brand of PepsiCo India, on an average contained 15.2 ppb pesticide residues; this is **30 times** the BIS standards
- Coca-Cola, the flagship brand of Coca-Cola India, on an average contained 13.4 ppb pesticide residues; this is **27 times** the BIS standards
- The average pesticide residues in all brands of PepsiCo was 12.7 ppb. This is **25 times** the BIS standards
- The average pesticide residues in all brands of Coca-Cola India was 11.05 ppb. This is **22 times** the BIS standards.

ABOUT US

The methodology for analysis remained the same as in 2003. Each sample was tested three times for organochlorine pesticides and three times for organophosphorous pesticides using a Gas Chromatograph (GC). The samples were analysed using the US Environmental Protection Agency established methodology for testing as before. However, there are key differences:

The Joint Parliamentary Committee had pointed out that the CSE laboratory had not confirmed its results with a GC-MS — an expensive equipment used to validate the tests. The pesticides have been confirmed using a GC-MS in this survey. It was also said that the CSE laboratory is not accredited. This time the laboratory is accredited with ISO 9001:2000 quality management system.



Heptachlor (ppb)	Organochlorines total (ppb)	Chlorpyrifos (ppb)	Malathion (ppb)	Organophosphates total (ppb)	Pesticides total (ppb)	No of times the BIS standard
0.74	9.11	6.06	0.06	6.11	15.22	30.4
0.23	1.96	2.02	0.00	2.02	3.97	7.9
0.34	3.60	3.37	0.00	3.37	6.97	13.9
0.29	6.84	3.54	0.30	3.84	10.68	21.4
0.40	7.12	0.52	0.45	0.96	8.09	16.2
0.97	7.72	3.16	0.00	3.16	10.88	21.8
0.51	5.90	6.53	0.03	6.56	12.46	24.9
0.57	**7.62**	**4.94**	**0.12**	**5.06**	**12.68**	**25.4**
0.21	6.97	6.11	0.30	6.41	13.38	26.8
0.16	7.59	3.24	0.11	3.35	10.94	21.9
0.15	4.16	2.50	0.07	2.57	6.73	13.5
0.45	5.61	3.29	0.24	3.54	9.14	18.3
0.26	**6.34**	**4.49**	**0.22**	**4.71**	**11.05**	**22.1**

! Sprayed to kill sucking and biting pests. Also used as smoke in grain stores. Health effects are breast cancer, non-Hodgkins lymphoma, polyneuritis, chronic liver damage-cirrhosis and chronic hepatitis, endocrine and reproductive disorders, allergic dermatitis

! It is one of the most widely applied insecticides in homes or restaurants, against cockroaches or termites. Chlorpyrifos has chronic neurobehavioural effects like persistent headaches, blurred vision, unusual fatigue or muscle weakness, and problems with mental function including memory, concentration, depression and irritability

It is clear. Three years later, the two soft drink companies have done little to clean up. Instead of cleaning their product, clearly the emphasis has been to clean up the process of standard-setting so that there are no regulations to hold the companies accountable. The fact is that pesticide residues are still at unsafe levels. In some bottles, the pesticide levels exceed standards by 200 times. Clearly this is unacceptable. These products are the preferred choice of millions in this country. But with pesticides, this is not the right choice *baby*

WHY STILL UNSAFE?

Companies say that pesticides in their drinks are at sub-ppb levels. They say this because they want you to believe that their products are safe.

Pesticides are tiny toxins. But toxicity is not defined in terms of size in absolute terms. It is defined in terms of the extent of our exposure to pesticides through different sources and how much we are allowed each day, when we eat or drink.

Toxicity, then, is not merely about large numbers. Exposure to pesticides in small — even tiny — doses over time leads to chronic health effects. Many pesticides have an immunosuppressive effect: they trigger diseases like cancer and asthma. There are pesticides that are persistent: they build up in our bodies and cause diseases over time. For instance, lindane, a persistent organochlorine pesticide, detected in all soft drink samples, is a potent carcinogen. Pesticide companies market 'non-persistent' organophosphorous pesticides. But recent scientific evidence indicts this category of toxins as deadly. Chlorpyrifos, an organophosphate pesticide, is a suspected neuroteratogen. Pregnant women exposed to tiny amounts of chlorpyrifos have been found to give birth to babies with reduced weight and head circumference. This pesticide was found in all drinks we tested.

Pesticide residues from essential food items is acceptable. But since soft drinks have absolutely no nutritional value, they should be completely free from pesticides

Safe because others are more unsafe

Cola companies say they are safe because milk, apples and vegetables have more pesticides. But this is twisting science.

They miss the point that there is a trade-off in which we ingest pesticides even as we need nutrition. Pesticide safety is all about ensuring that our total exposure — through the food we eat and water we drink — is kept within the threshold of safety. This threshold, defined in terms of the total pesticide quota we are allowed each day, is called acceptable daily intake (ADI). Based on the toxicity of a pesticide, the acceptable dose will differ. The dose will also differ on the basis of weight and age. So, it may be 'safe' to ingest 0.3 mg of lindane for an adult weighing 60 kg, but a child weighing 10 kg is only allowed 0.05 mg of lindane a day, for instance.

This threshold of safety, or the daily quota of pesticide, is spread over various food commodities that people normally eat. The amount of pesticide allowed in each food item consumed is called the maximum residue limit (MRL). MRLs are the standard for regulating pesticide in food.

Now, nowhere in the world are soft drinks included as an essential part of people's diet in the pesticide threshold calculation, simply because they do not have nutritional value and, therefore, are not part of the 'poison-nutrition' trade-off. So, if any pesticide residues are allowed in soft drinks, then the entire pesticide quota calculations have to be redone in a way that our total exposure still remains within the ADI. In other words, some essential food item will have to be thrown out of our diet basket. We will have to substitute soft drinks with, say, milk or apples, fruit juices or cereals. Given that the pesticide exposure of Indians already exceeds the ADI many times (see 'A refreshing guide to food safety', *Down To Earth*, December 31, 2003), we literally have no space in our food-poison trade-off for non-essential and non-nutritive intake. Therefore, while fruit juices, which have a nutritive value, can be assigned a pesticide quota, soft drinks cannot, because they have no nutritive value. Fruit juices or fruits are part of the nutrition-poison trade-off. They are fitted into our diets.

Safe because they meet standards that don't exist

This is the argument trotted out by soft drink companies. The fact is that safety is about setting and adhering to standards for pesticide residue in food products. Therefore, any contaminant that exceeds the standard makes the product unsafe. But in the case of soft drinks, the final product standards for the quantity of pesticides allowed have not been notified. They have not been notified because companies are fighting these standards tooth and nail. But if the final (not notified) standards are considered, these products are unsafe because the pesticide residues exceed the safety limit many times.

The bottom line is that these are definitely unsafe. No government or Aamir Khan can give them a certificate of safety. Unless they are acting. ■

Safety spin

On July 26, 2006, the Lok Sabha passed the much controversial Food Safety and Standards Bill, 2005. But will it ensure your safety? The bill defines contaminants as "any substance, not intentionally added to food, which is present in such food as a result of the production ... or as a result of environmental contamination". In other words, pesticide residues, which are not intentionally added, but are introduced in the production process, are contaminants. The bill defines extraneous matter as "any matter contained in an article of food which may be carried from the raw materials, packaging materials or process systems used for its manufacture or which is intentionally added to it, but such matter may not render such article of food unsafe". In other words, pesticides carried from raw material are also extraneous matter. So are pesticide residues in soft drinks contaminants or extraneous matter? If they are extraneous matter, they are not unsafe. Safety, in turn, is not measured against given standards.

It gives companies the perfect clean chit. They are permanently safe. They are always protected by law.