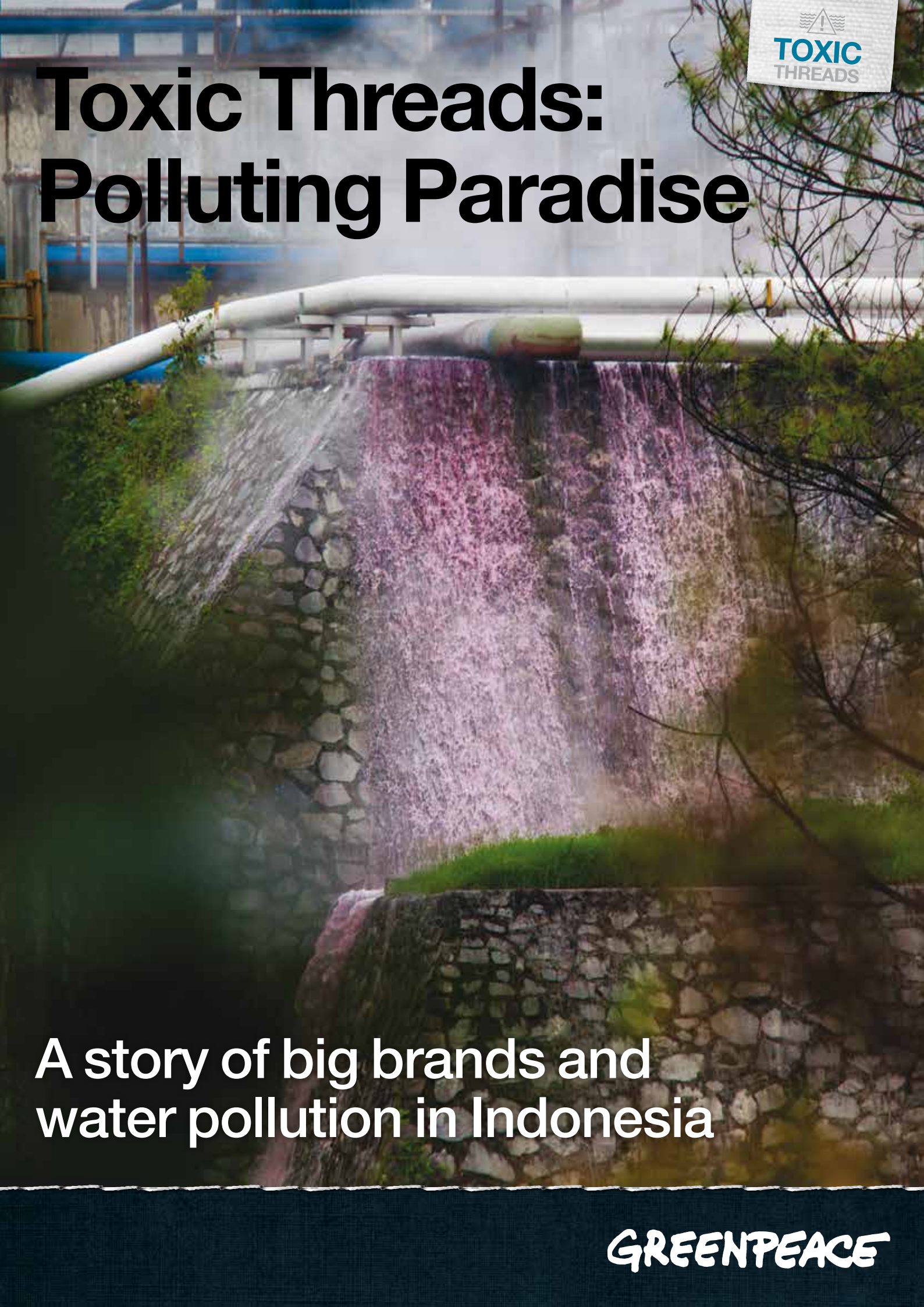

Toxic Threads: Polluting Paradise

A story of big brands and water pollution in Indonesia

GREENPEACE

Toxic Threads: Polluting Paradise

Acknowledgements:
We would like to thank the following people who contributed to the creation of this report. If we have forgotten anyone, they know that our gratitude is also extended to them.

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Terminology used in this report

Bioaccumulation: The mechanism by which chemicals accumulate in living organisms and get passed along the food chain.

Hormone disruptors: Chemicals known to interfere with hormone systems of organisms. For nonylphenol, the most widely recognised hazard is the ability to mimic natural oestrogen hormones. This can lead to altered sexual development in some organisms, most notably the feminisation of fish*.

Persistence: The property of a chemical whereby it does not degrade in the environment, or degrades very slowly.

Surfactants: Chemicals used to lower the surface tension of liquids. They include wetting agents, detergents, emulsifiers, foaming agents and dispersants used in a variety of industrial and consumer applications including textile manufacture.

**Jobling S, Reynolds T, White R, Parker MG & Sumpter JP (1995). A variety of environmentally persistent chemicals, including some phthalate plasticisers, are weakly estrogenic. Environmental Health Perspectives 103(6): 582-587; Jobling S, Sheahan D, Osborne JA, Matthiessen P & Sumpter JP (1996). Inhibition of testicular growth in rainbow trout (Oncorhynchus mykiss) exposed to estrogenic alkylphenolic chemicals. Environmental Toxicology and Chemistry 15(2): 194-202.*

Note to the reader

Global North and Global South. Throughout this report we refer to the terms "Global North" and "Global South" to describe two distinct groups of countries. The term "Global South" is used to describe developing and emerging countries, including those facing the challenges of often-rapid industrial development or industrial restructuring, such as Russia. Most of the Global South is located in South and Central America, Asia and Africa. The term "Global North" is used for developed countries, predominantly located in North America and Europe, with high human development, according to the UN Human Development Index.* Most, but not all, of these countries are located in the northern hemisphere.

** United Nations Development Programme (UNDP). (2005). Human Development Report 2005. International cooperation at a crossroads. Aid, trade and security in an unequal world. Available at: http://hdr.undp.org/en/media/HDR05_complete.pdf*

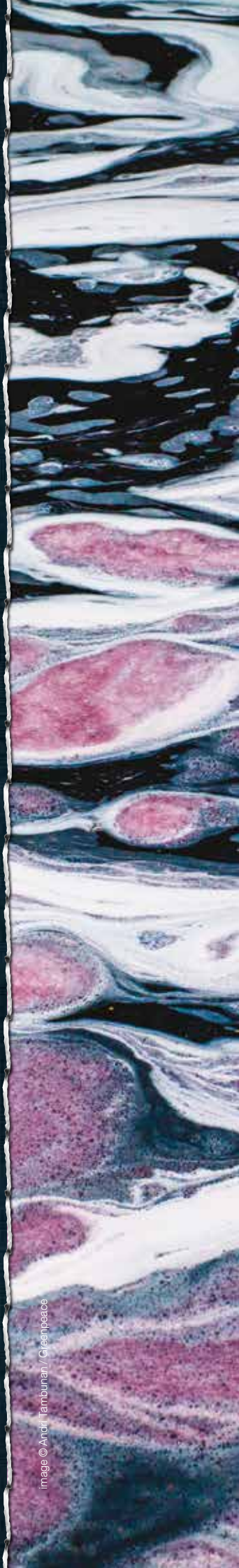
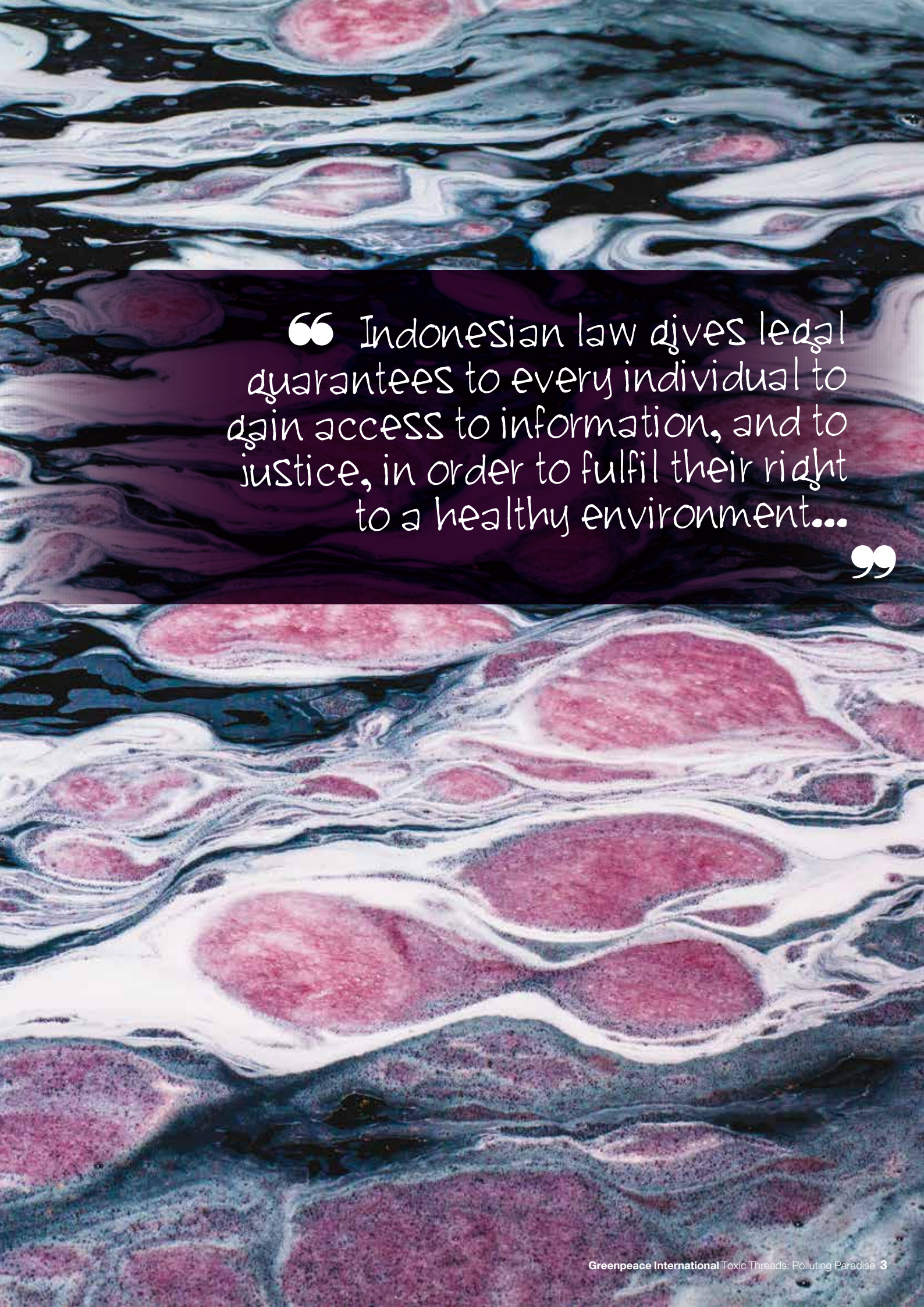


image © Andri Tambunan / Greenpeace



> “Indonesian law gives legal guarantees to every individual to gain access to information, and to justice, in order to fulfil their right to a healthy environment...”

Image © Andri Tambunan / Greenpeace

image A boy on the banks of the Citarum River, Citeureup Village, Kabupaten Bandung.

TOXIC THREADS

#1

Introduction and key findings

Greenpeace International has commissioned a new investigation that delves even further into the hazardous chemicals used in the production of high street fashion, going beyond previous investigations in China and Mexico. This latest report builds on the Detox campaign's work, which reveals how textile manufacturing is a major contributor to water pollution in the Global South.

Our research focuses on a large textiles facility in Indonesia, where we found that a wide range of hazardous substances is being discharged directly into the Citarum River. The responsible facility is PT Gistex, located near Bandung in West Java – where the modern textile industry is concentrated – with 60% of production located in the Citarum River watershed. This factory undertakes polyester weaving and wet processing such as dyeing, printing, and finishing of polyester.

Famous for its batik, Indonesia has a long history of textiles production. It is currently among the Top 10 largest exporters of clothing in the world, while it was the 11th largest exporter for textiles in 2011. Indonesia is the largest economy in South East Asia and textiles and clothing accounted for 8.9% of the country's total exports in 2010.[1]

Water also has a special place in Indonesia's culture. The expression for "homeland" in Bahasa Indonesia, the national language, is "Tanah Air Kita" – which translates as "Our Land and Water", reflecting the fact that Indonesia is made up of more than 17,000 islands.[2] Tisna Sanjaya[3], an Indonesian artist and social and environmental activist, speaks of the Citarum River as "the cradle of our nation's culture".

Unfortunately, these resources face huge industrial demands, and rivers are also used as a convenient dumping ground for all types of wastes, with the inevitable result that most of the major rivers on Java are badly polluted.[4]

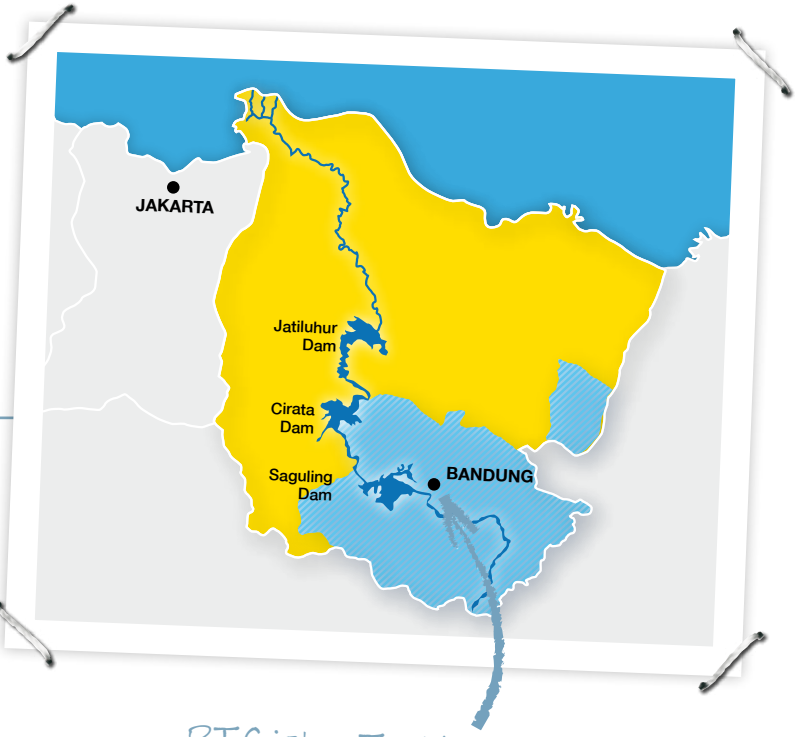
The Citarum River is the river with the largest watershed in West Java; it also has a reputation of being one of the dirtiest rivers in the world.[5] The visible problem of garbage and untreated domestic wastewater in the Citarum is severe.[6] Wastewater from the textile industry is also a major source of pollution, especially in the Upper Citarum where 68% of industrial facilities produce textiles[7], and where the PT Gistex facility is located.

Key findings

Greenpeace collected samples of wastewater discharged from the PT Gistex facility via three outfalls in May 2012.

A diverse range of chemicals was identified in the samples, many with known hazardous properties.[8] Some examples are toxic to aquatic life, while others are persistent pollutants, which means they will remain in the environment long after their release.

The Citarum River, West Java



In particular, **nonylphenol (NP)** was found in the wastewater from the main outfall, along with **nonylphenol ethoxylates (NPEs)**. NPEs are used as detergents and surfactants in textiles manufacturing, and can later degrade back to NP. NP is a well-known persistent environmental contaminant with hormone disrupting properties. The previous Greenpeace investigations found residues of NPEs in items of clothing sold throughout the world, showing that they are used in manufacturing processes in many parts of the textile sector (see Box 1).

Tributyl phosphate (TBP), a hazardous chemical used in the textile industry as a carrier for certain dyes, as a plasticiser, and as an antifoaming agent, was also found. It is toxic to aquatic life, and moderately persistent. A high level of dissolved **antimony**, a toxic metalloid used in polyester manufacture, was found in the main outfall and one of the two intermittent outfalls. Other substances present included quinoline-related compounds associated with the use of dyes, and certain ethylene glycol ethers. However, little information is available on their toxicity.

Wastewater discharged from one of the two smaller intermittent outfalls was highly **alkaline** (pH14), posing an acute hazard to the receiving river, and organisms within it in the immediate vicinity of the discharge, as well as anyone coming into contact with the wastewater or river water close to the outfall. Wastewater with a pH value of 14 is very caustic, will burn human skin coming into direct contact with the stream, and will have a severe impact (most likely fatal) on aquatic life in the immediate vicinity of the discharge area. This sample also contained a high loading of **p-terephthalic acid**, a raw material used in the manufacture of PET polyester. **The presence of this substance and the high alkalinity suggests that it had not received even the most basic of treatment prior to discharge.**

Some of the hazardous chemicals found in this study have also previously been reported by Greenpeace in industrial wastewaters discharged in China and Mexico, including those released directly from textile manufacturing facilities, and in communal discharges from industrial zones, where a high proportion of textile manufacturers are located.

As well as finding hazardous substances from the investigated manufacturing facility, this report also reveals that –while the general pollution of the Citarum River by domestic and industrial wastewater is acknowledged to be a problem – the full extent of pollution by hazardous substances is largely unknown. Other studies have shown that heavy metals in sediments are one of the pollution problems in the Citarum River, with industry likely to be a major source. However, no assessments have been made on the industrial sources of other hazardous substances, such as those identified in this investigation.

Regulation of industrial discharges in Indonesia is limited, and there is little enforcement. It is based wholly on setting allowable limits for a very limited range of parameters, with no comprehensive mechanism to identify and phase out the use and release of hazardous chemicals. Transparency is also a problem; in fact, there is no easy access to information for the public on the monitoring of wastewaters. Details on discharge permits, the location of outfall pipes, and monitoring data to check compliance or otherwise, are not universally available.

The PT Gistex facility is only one example of what is likely to be a more widespread problem of hazardous substances being released in the effluent of textile manufacturers, as well as other industrial sectors. Indonesia is a country where there is little information about the use of hazardous substances in production processes or their release in wastewater. Some of the responsibility for this problem lies beyond the facilities concerned and government authorities.

BOX 1

Fashion – a dirty business

This investigation follows six recent Greenpeace International reports – *Dirty Laundry, Dirty Laundry 2: Hung Out To Dry, and Dirty Laundry Reloaded;* and the more recent *Toxic Threads: The Big Fashion Stitch-Up, Toxic Threads: Putting Pollution on Parade* and *Toxic Threads 3: Under Wraps*[9] – which investigated the discharge of hazardous substances from textile manufacturing and their presence in clothing and footwear.

Dirty Laundry revealed how a range of hazardous substances was being discharged into the Yangtze and Pearl River deltas from two textile manufacturers in China with commercial links to many major clothing brands.[10] More recently, as outlined in *Toxic Threads: Putting Pollution on Parade* and *Toxic Threads: Under Wraps*, Greenpeace found a range of hazardous substances discharged from two industrial zones in China with a high proportion of textile manufacturers, and from two facilities manufacturing textiles in Mexico.[11]

The other reports tested samples for the presence of hazardous substances in clothing products. Together, these reports demonstrate the release of hazardous chemicals – NPs/NPEs in particular – at two points in the textiles chain. Firstly, that the presence of hazardous chemicals in finished products shows that they were used in the manufacturing facilities – this would have consequently led to their release in the country of production, as was found to be the case for two facilities in *Dirty Laundry*. Secondly, that many of these substances can continue to pollute the environment and waterways around the world, wherever a product is sold and is subsequently washed.[12]

The need for corporate leadership

Greenpeace International investigations uncovered that several global fashion brands have had a business relationship with at least one part of PT Gistex Group, the company associated with the polluting facility (PT Gistex Textile Division) in Indonesia, which Greenpeace sampled in 2012.

Gap Inc. (which owns the brands **Gap**, **Old Navy** and **Banana Republic**) has yet to credibly take responsibility for its toxic footprint around the world. Over the past year, it has called upon multiple times by Greenpeace to agree a Detox commitment, and it has been linked to pollution scandals on several occasions[13]. Gap's lack of responsible action threatens the Citarum and other river systems – and the people who depend upon them – and also brings into question whether it is acting as a socially and environmentally conscious organisation.

Similarly, the Japan-based **Marubeni Corporation** – which refused to respond to Greenpeace's requests for clarity on the nature of its subsidiary's business relationship with PT Gistex Group – needs to take urgent action to ensure that its global operations are not causing environmental destruction via the release of hazardous substances, and increase transparency about its suppliers and the impacts of their production processes on the local environment.

Brooks Brothers – a brand that has provided clothing for 39 out of 44 US Presidents (including President Obama) – has acknowledged a business relationship with parts of PT Gistex Group. Greenpeace is urging the company to act quickly to resolve an ambitious Detox commitment.

Other companies that have already made commitments to Detox their supply chains and products – including **Adidas Group** and **H&M** – have also been found to have had a business relationship within PT Gistex Group.

Adidas Group failed to reveal in writing the full nature of a direct and/or indirect business relationship with all parts of PT Gistex Group[14] but acknowledged having a relationship with PT Gistex Garment Division. For full details, please see pages 32-33.

During the 2012 London Olympics, Adidas Group indicated that it wanted to be "open and honest and ... show best practices in terms of supply chain disclosure".[15] While these are commendable words, Adidas Group's current lack of comprehensive transparency regarding its suppliers and their releases – and the brand's failure to take ambitious on-the-ground action since its Detox commitment in 2011 – undermines the company's proclamations. It is precisely this lack of transparency within the fashion industry that allows for the deliberate and harmful release of hazardous chemicals by textile suppliers to continue.

Consumers are increasingly expecting brands to be transparent about their business practices, and H&M's recent public disclosure of its global supply chain is an important and commendable first action.[16] **H&M** must now follow this up with comprehensive disclosure of the hazardous chemicals used on a facility-by-facility and chemical-by chemical basis for each of its identified supplier facilities. H&M must also make this pollution data accessible (through its suppliers) to the public, using online platforms such as the IPE platform.[17]

Unless companies like **Gap Inc.**, **Adidas Group** and **Marubeni Corporation** act with the necessary urgency, and work proactively with their suppliers to provide their customers and those living near these facilities with pollution information that they have a right to know, eliminating the discharge of hazardous chemical into our precious and life-giving waterways will not progress at the pace required. Without information regarding what hazardous chemicals suppliers are releasing into local water systems, this pollution will continue unabated, and the duty of care these companies act upon will continue to be questioned.

To help solve the problem of hazardous chemicals contamination, transparency of information between suppliers and brands – as well as full supplier engagement through hazardous substance-use inventories – is essential. Corporate and governmental policies to eliminate the releases of hazardous substances, and their substitution with safer alternatives, need to be enforced. A crucial next step for all companies – including the brands linked to PT Gistex Group – is to swiftly identify all of the chemicals used across their production

processes, and screen these chemicals, in an open and transparent manner, in order to identify those chemicals with hazardous properties, both from a health and from an environmental perspective. This process can then facilitate the swift substation and/or elimination of the hazardous substances used by the sector, further accelerating the transparency revolution taking place within the sector and contributing towards the ability of local aquatic systems to provide safe and clean water.

It is equally vital to have full facility public disclosure, in line with the right-to-know principle.[18] This will create wider and deeper awareness within the communities affected by the toxic pollution, and provide critically needed information for civil society organisations and policy makers.[19]

Societal awareness of the use and release of hazardous substances from industry will increase informed pressure for comprehensive chemical management laws, to cover all types of industry, not only textile manufacturing. Such a programme therefore needs to be developed by the Indonesian government, and should include action to eliminate hazardous substances and achieve greater openness in public disclosure of discharges and other releases from industry.

The role of "People Power"

As global citizens and consumers we can use our influence to play a key role in creating a toxic-free future.

Since the launch of the Detox campaign in July 2011, over half a million fashionistas, activists, designers, and bloggers have come together, united by a belief that beautiful fashion shouldn't cost the Earth.

Together, we have been able to convince big brands– including Zara, Mango and Valentino – to commit to clean up their products, and work with their suppliers to ensure no more hazardous chemicals are used to make the clothes we wear.

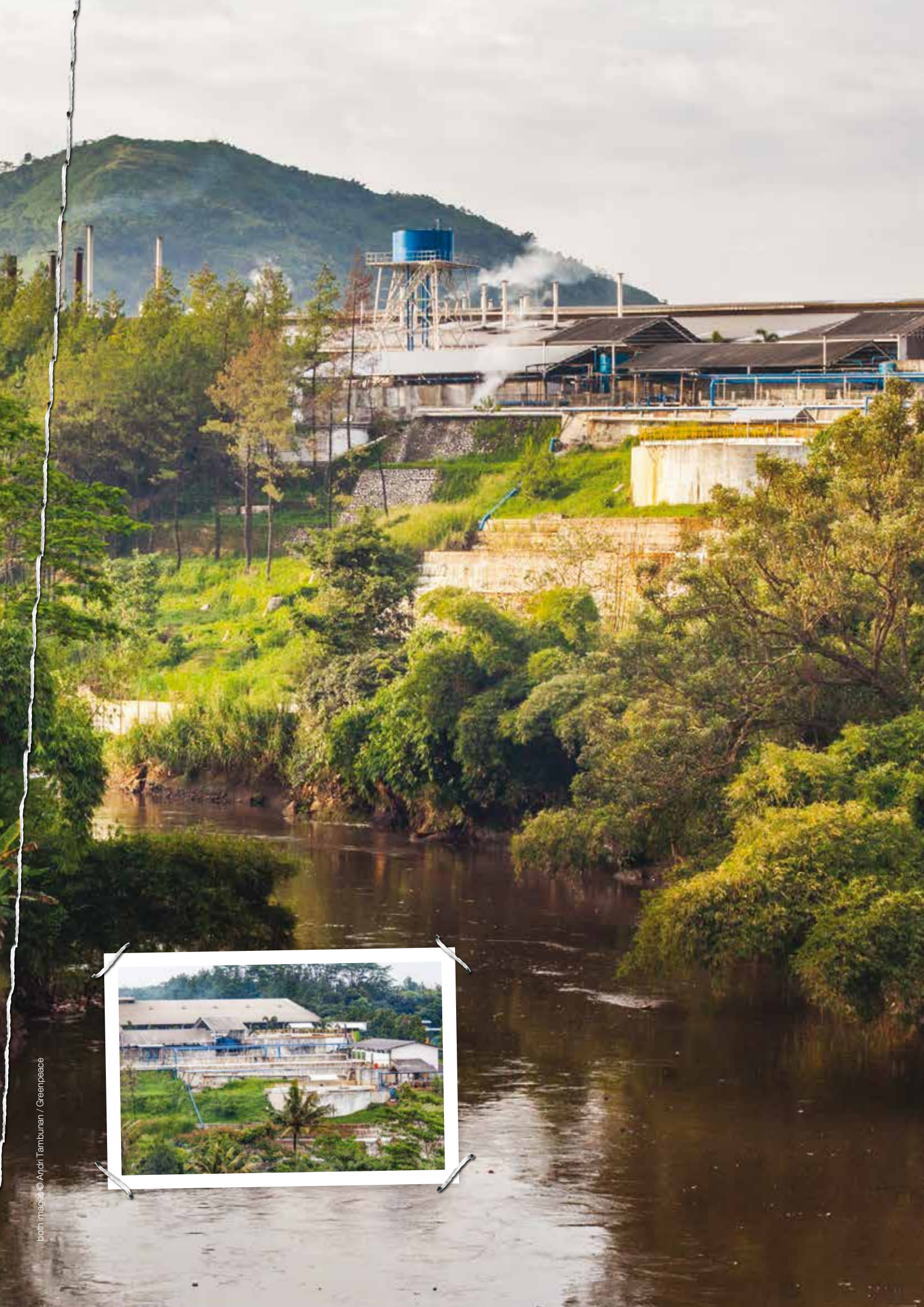
Our work is far from done. More brands need to come on board, and those that have committed need to start taking action where it really matters – on the ground, where the affects of the pollution are most keenly felt.

However, our successes so far prove one thing: that when we join together, big brands and policy makers do listen.

To find out more about how you can make your voice count, visit:
www.greenpeace.org/detox

image Greenpeace activists wearing protective suits protested at Curug Jompong waterfalls, Citarum. Tests have shown that wastewater being discharged from the PT Gistex facility to the Citarum River immediately upstream of the Jompong waterfall was contaminated with toxic chemicals.

image © Donang Wahyu / Greenpeace



both images © Andri Tamburan / Greenpeace

image The PT Gistex facility, which discharges wastewater containing hazardous chemicals directly into the Citarum River.

#2

Indonesian polyester textile manufacturer investigation

The PT Gistex facility is located near the village of Lagadar, in the Margaasih District to the west of Bandung City, which is the capital of West Java Province and the third largest city in Indonesia. Industry in the Upper Citarum area, which includes the Bandung Regency, is dominated by textile manufacturing, which represents 68% of all the industrial factories in the region, with a total of 446 textile manufacturing facilities in the Upper Citarum area.[20] Textiles and apparel are an important part of the Bandung City economy, which also includes tourism, technology and plantations/agriculture.

PT Gistex established its first plant in 1975 in the city of Bandung, and by 2007 had eight factories with 3,000 employees, producing 12 million articles of clothing a year and 6 million yards of fabric a month.[21] It is one of the largest manufacturing companies in Bandung, focusing on textiles, garments and fashion. Its products are exported all over the world.[22] It currently has six facilities in Indonesia, with its head office, textiles and garment divisions in Bandung.[23]

The PT Gistex Textile Division investigated in this report undertakes polyester weaving, and wet processing such as dyeing, printing, and finishing of polyester georgette. The capacity for textiles processing was expanded in 2000 to reach 3.5 million yards a month.[24]

Location of the PT Gistex facility

The PT Gistex Textiles facility is bordered by farmland and housing, with the Citarum River to the south of the factory. Effluent from textiles processing is reportedly treated in a wastewater treatment plant (WWTP), which then flows via a terrace to the main outfall pipe. There are two other outfalls adjacent to the main outfall, which discharge wastewater intermittently, although the specific origin of the wastewaters within the facility is not clear. According to Indonesian regulations, any wastewater pipe or point of discharge requires a permit[25], with specific limits set for a small range of general parameters.[26] In reality, it is very difficult to access individual discharge permits for any particular facility or discharge pipe. Therefore, the legal status of the PT Gistex wastewater outfall pipes, and the actual permitted levels of pollutants dischargeable into the River Citarum, is not publicly known.

All three outfalls discharge directly into the river. Wastewater was observed being discharged continuously from the main outfall during operating hours, while discharges from the other two were sporadic, and the wastewater differed visibly to that from the main outfall. Immediately downstream, the river flows over the Jompong Waterfall. Here, local residents and Greenpeace Southeast Asia activists have observed large amounts of foam – floating on black-coloured water – on many occasions, specifically during the dry season. A strong smell, which becomes more intense during the night – particularly for those living in traditional Indonesian houses rather than brick-built houses – is also reported.

Industry in the Upper Citarum area, which includes the Bandung Regency, is dominated by textile manufacturing, which represents 68% of all the industrial factories in the region, with a total of 446 textile manufacturing facilities in the Upper Citarum area.

BOX 2

PT Gistex – A history of pollution

PT Gistex has been evaluated directly by the Indonesian Ministry of Environment as part of its "PROPER" programme (see Chapter 4 for more details). In 2009/10, it was listed as "red", indicating that it was not in compliance with environmental regulations[27]. By 2010/11, its performance had improved and it was one of several textile factories that was accredited as "blue", showing that it had complied with the required environmental regulations.[28] However, the only information available to the public is this colour classification. Concrete details of the types of pollutants released, the amounts, the concentrations, and the locations of the pollutants generated by each activity are not disclosed. It is therefore impossible to independently verify that monitoring data shows compliance or non-compliance with any of the environmental regulations, notwithstanding the narrow range of parameters covered by them. The exact reason for the non-compliance with regulations in 2009/10 is also not known.

In November 2009, a dispute arose between PT Gistex and the local community of Margaasih District. The community was seeking compensation in the form of health insurance for the construction of a chimney without consultation, complaining that people were suffering respiratory effects, such as painful coughing, due to thick dust and odour from the chimney. According to the residents, waste and pollution of air and water from the plant has damaged the environment for many years. The House of Representatives mediated a tripartite discussion between PT Gistex, the Ministry of Environment (MoE) and the community. A PT Gistex Director was quoted in the local press as saying: "We are convinced that our company is not destroying the environment, as we have already gained a blue accreditation from the government (….) though other compensation can be discussed".[29] The outcome of the tripartite discussion is not known.

image Industrial wastewater, discharged into the Citarum River by the PT Gistex facility.

image © Andri Tambunan / Greenpeace

Outcomes of the investigation

Four samples of discharged wastewater were collected on two separate days from the outfalls of the PT Gistex facility to the Citarum River. A sample from the main outfall was collected on 12 May 2012 at 8.30am, with a further sample collected on 14 May 2012 at 10.10am, followed by samples from the two intermittent outfalls at 10.20am.

There was a large flow of wastewater from the main pipe, which was brown-coloured and partly foamy. The discharge from the other two outfalls was intermittent, the flow rate was generally lower than that of the main outfall, and the wastewater was different in appearance (clear and colourless).

All samples were analysed at the Greenpeace Research Laboratories (University of Exeter, UK), using qualitative analysis to detect the presence (though not the concentrations) of semi-volatile and volatile organic compounds, as well as the concentrations of a range of metals and metalloids.

A diverse range of chemicals was identified in the samples of discharged wastewater. Many of these chemicals have known hazardous properties, including compounds that are toxic to aquatic life, persistent, and able to bioaccumulate. The key findings for this facility are summarised below.

Main outfall - chemicals found in wastewater samples included:

- **nonylphenol (NP)**, a well-known persistent environmental contaminant with hormone-disrupting properties, together with **nonylphenol ethoxylates (NPEs)**, which are used as detergents and surfactants in textile manufacture and washing, and which degrade to NP;
- **tributyl phosphate (TBP)**, a hazardous chemical used in the textile industry as a carrier for certain dyes, as a plasticiser, and as an antifoaming agent, which is toxic to aquatic life and moderately persistent;
- a high level of dissolved **antimony**, a toxic metalloid used in polyester manufacture; and
- other substances for which little information is available on their toxicity, including quinoline-related compounds that are associated with the use of dyes, and certain ethylene glycol ethers.

Intermittent outfalls – chemicals found in wastewater included:

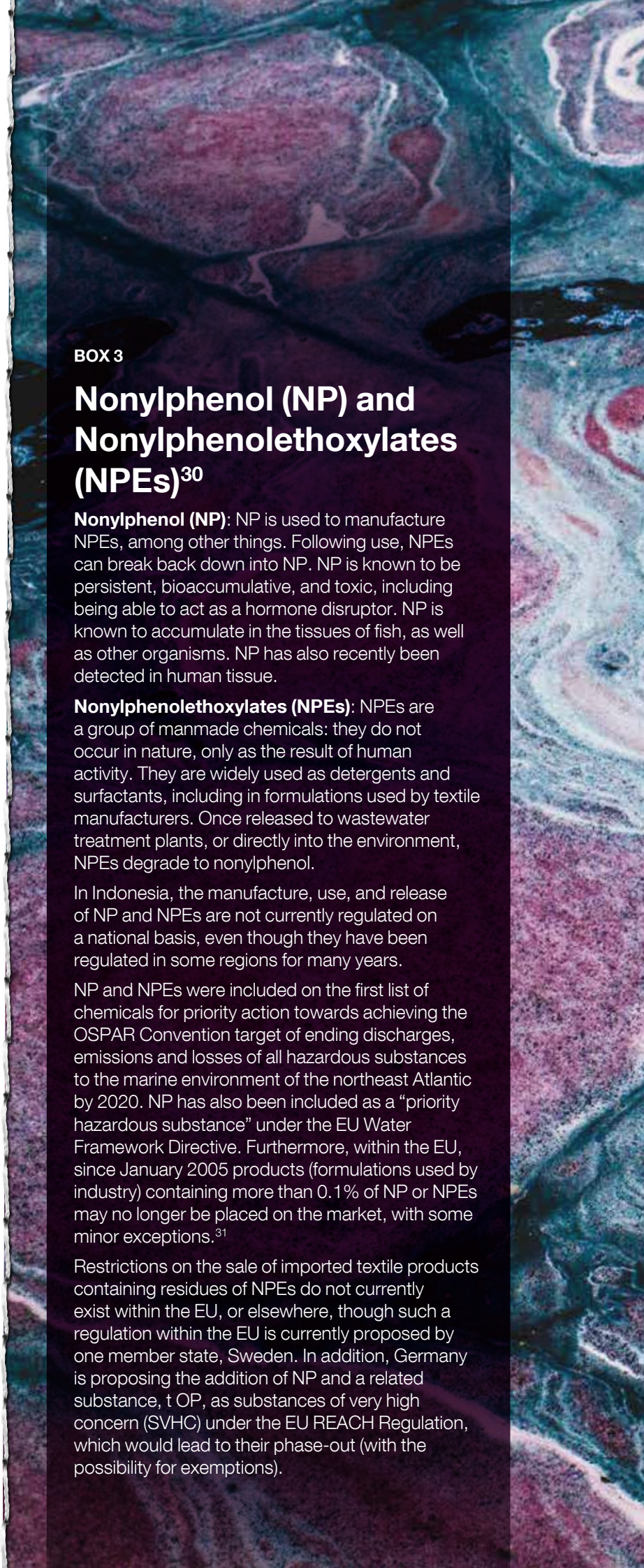
- Wastewater discharged from one of the two smaller intermittent outfalls was highly **alkaline** (pH14), posing a hazard to the receiving river and organisms within it, and contained a high loading of **p-terephthalic acid** (a raw material used in the manufacture of PET polyester), suggesting it had not received even the most basic of treatment prior to discharge. Wastewater with a pH value of 14 is very caustic, will burn human skin coming into direct contact with the stream, and will have a severe impact (most likely fatal) on aquatic life in the immediate vicinity of the discharge area. A high concentration of antimony was also found in this sample.

In addition, a significant proportion (in some cases most) of the chemicals isolated from each of these samples could not be reliably identified, a characteristic not uncommon for complex industrial effluents. The properties and potential impacts of these substances cannot, therefore, be assessed.

This investigation has demonstrated the use and release of hazardous chemicals by the PT Gistex facility. The mix of chemicals included many with known hazardous properties, but was dominated by the presence of NP and NPEs. Within wastewater treatment facilities, or following release into the aquatic environment, NPEs are readily degraded to the more toxic NP, which is highly resistant to further degradation, and therefore persistent within the environment (see Box 3). These compounds are regulated with respect to their manufacture, use, and release in some countries, as a result of the toxicity, persistence, and bioaccumulative potential of NP.

The findings of this study also highlight very poor management of some wastewaters at this facility. For example, basic treatment to neutralise the highly alkaline wastewater and remove the *p*-terephthalic acid found in the sample from one of the smaller outfalls had not taken place. Improved wastewater treatment, however, will not resolve the concerns regarding hazardous chemical use. Wastewaters containing NPEs and NP, and certain other hazardous substances including heavy metals such as antimony, cannot be treated effectively in conventional wastewater treatment processes.

Overall, this study has demonstrated that the PT Gistex facility provides a clear example of the use and consequent release of hazardous chemicals from a textile manufacturing facility in Indonesia. While these findings, based on a small number of samples from one facility, cannot be representative of wastewaters released from textile manufacturing facilities throughout Indonesia, it does provide a further illustration of what is likely to be the much wider problem of the discharge of effluents from this sector containing hazardous chemical contaminants.



BOX 3

Nonylphenol (NP) and Nonylphenolethoxylates (NPEs)[30]

Nonylphenol (NP): NP is used to manufacture NPEs, among other things. Following use, NPEs can break back down into NP. NP is known to be persistent, bioaccumulative, and toxic, including being able to act as a hormone disruptor. NP is known to accumulate in the tissues of fish, as well as other organisms. NP has also recently been detected in human tissue.

Nonylphenolethoxylates (NPEs): NPEs are a group of manmade chemicals: they do not occur in nature, only as the result of human activity. They are widely used as detergents and surfactants, including in formulations used by textile manufacturers. Once released to wastewater treatment plants, or directly into the environment, NPEs degrade to nonylphenol.

In Indonesia, the manufacture, use, and release of NP and NPEs are not currently regulated on a national basis, even though they have been regulated in some regions for many years.

NP and NPEs were included on the first list of chemicals for priority action towards achieving the OSPAR Convention target of ending discharges, emissions and losses of all hazardous substances to the marine environment of the northeast Atlantic by 2020. NP has also been included as a "priority hazardous substance" under the EU Water Framework Directive. Furthermore, within the EU, since January 2005 products (formulations used by industry) containing more than 0.1% of NP or NPEs may no longer be placed on the market, with some minor exceptions.[31]

Restrictions on the sale of imported textile products containing residues of NPEs do not currently exist within the EU, or elsewhere, though such a regulation within the EU is currently proposed by one member state, Sweden. In addition, Germany is proposing the addition of NP and a related substance, t OP, as substances of very high concern (SVHC) under the EU REACH Regulation, which would lead to their phase-out (with the possibility for exemptions).

BOX 4

Tributyl phosphate (TBP)[32]

TBP has various industrial uses, including as a carrier for certain dyes, as a plasticiser in plastics and textiles, and as an antifoaming agent.

TBP does not occur naturally in the environment, but has been commonly detected in surface waters and freshwater sediments. TBP is toxic to aquatic life and moderately persistent, and has previously been detected in wastewaters discharged to surface waters from wastewater treatment facilities, including textile-manufacturing wastewater.

TBP has been classified under the Globally Harmonised System for classification and labelling of chemicals as harmful if swallowed, irritating to skin and suspected of causing cancer.

BOX 5

Antimony[33]

In addition to the organic compounds identified, high levels of dissolved antimony were found in the samples of wastewater collected from one of the intermittent outfalls and from the main wastewater outfall, along with some additional antimony bound to particulates suspended in the wastewater.

The polymerisation process used to produce PET is commonly catalysed by antimony trioxide, which is likely to result in wastewater containing antimony. Furthermore, polyester fibres typically contain residues of antimony trioxide used in the manufacture. These fibres have a high surface area, and are often subjected to harsh conditions during processing, when antimony trioxide residues can be expected to leach out into processing water.

Antimony compounds have been associated with dermatitis and irritation of the respiratory tract, as well as interfering with normal function of the immune system. In addition, antimony trioxide has been listed by the International Agency for Research on Cancer as “possibly carcinogenic to humans”, with inhalation of dusts and vapours the critical route of exposure.

both images © Andri Tamburan# / Greenpeace

image Wastes in the Citarum River.

inset A girl walks along the shore of the river, at Citeureup Village.

#3

Visible and invisible pollution of Indonesia's rivers

Freshwater resources in Indonesia are abundant, accounting for about 21% of total water resources in the Asia Pacific region.[34] There are huge demands on these resources. On the island of Java, massive development, extensive changes in land use, and the continuous expansion of extractive industries have contributed to a water deficit.[35] There are over 5,590 rivers in Indonesia[36], however "most of the major rivers on Java are badly polluted with a combination of untreated domestic wastes and largely from uncontrolled industrial effluents", according to a status report by the Indonesian government in 2003.[37]

Other sources also report that pollution from all sources is an ongoing, and even increasing, problem in some places over recent decades.[38] Toxic and hazardous waste is considered by the government to pose an even more serious long-term threat to human health and welfare than domestic waste.[39]

Samples of groundwater in Jakarta and marine life in Jakarta Bay, for example, already show evidence of contamination by toxic metals such as mercury.[40] Heavy metals are also reported to be widespread contaminants in Indonesian coastal sediments, with the highest concentrations recorded on the northern coast of Java and the eastern coast of Sumatra.[41]

Industrial and urban developments are often located alongside rivers, which are commonly used to dispose of industrial and domestic wastewater, often without any treatment. Rivers that are known to be suffering from severe pollution are the Ciliwung[42] and the Batang Arau[43] rivers. The Ciliwung and Cikaniki rivers in West Java are in a "dreadful condition" as a result of metal, organic and fecal pollution, with levels of the toxic metal cadmium showing the severity of industrial pollution. There are high risks to human health due to levels of mercury in Cikaniki river sediments and rice paddy samples, connected to illegal gold mining.[44] It is, however, the Citarum that has become widely reported as one of the world's dirtiest rivers.[45]

image A resident of Ciwalengke Village pitches a bucket of water from a nearby well, which is sourced by the river.

image © Andri Tambunan / Greenpeace

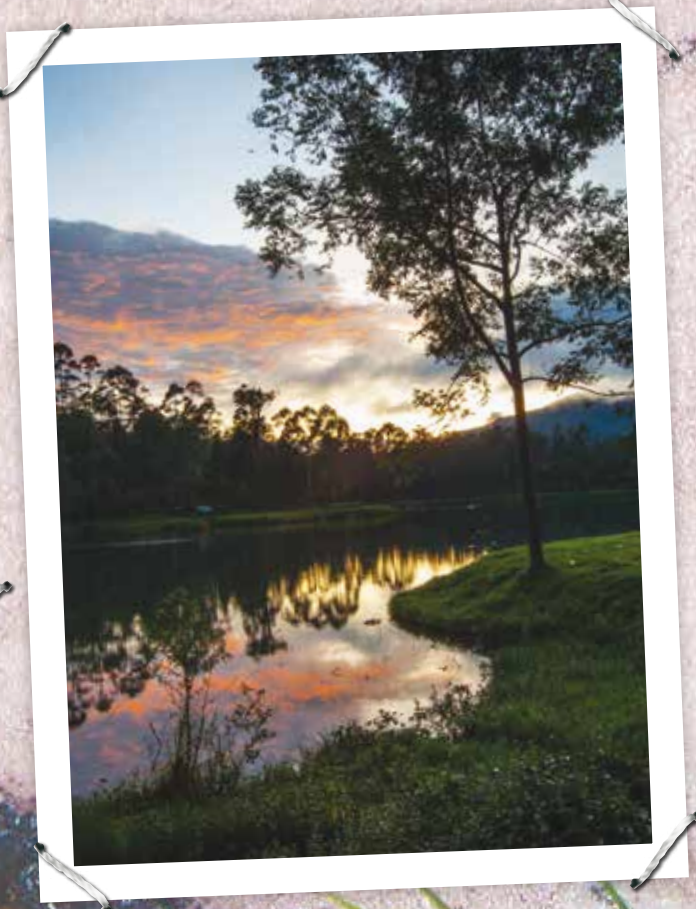
The Citarum River
A convenient dumping ground

The Citarum is the largest river in West Java, Indonesia, originating in the high volcanic peaks near the southern coast of Java and flowing in a northwesterly direction for 270km. For the first 200km it flows through mountainous and hilly terrain, followed by three cascade reservoirs, with the final 70km stretch irrigating a vast alluvial plain before it drains into the Java Sea just east of Jakarta.[46] The climate is characterised by two distinct seasons; rainy from November to April, and dry for the remainder of the year. Flooding is a common occurrence, especially during the rainy season. The Citarum plays a vital part in the region as a source of water for agriculture, domestic water supply, industry, and for the disposal of sewage. It also provides energy from three hydroelectric dams, and is reported to deliver 20% of Indonesia's gross domestic product and 80% of surface water, via the West Tarum Canal, to supply Jakarta's drinking water.[47] Water from the river is used to irrigate hundreds of thousands of hectares of rice and vegetables, and to supply drinking water to big cities including Bandung and Jakarta. A population of almost 40 million people depends upon it.[48] The government identified the Citarum as a "super-priority river" in 1984.[49]

Population growth and industrial development since the 1980s, pollution from agriculture, and deforestation leading to soil erosion, siltation, and flooding have all impacted the health of the Citarum River. In addition, it is widely reported that untreated wastewater from public sewers and industry, and large quantities of garbage, are routinely dumped in the river.[50]

A study on river water quality in 2010 concluded that river water in the Citarum was generally of very bad quality, according to general pollution parameters[51], except in the river segments immediately downstream of Jatiluhur Dam (due to the self-purification effect of the three reservoirs). It warns that the problem of water quality degradation is likely to increase year on year, due to the increasing pollution loads from untreated domestic and industrial effluent, particularly in the Bandung region. In general, levels of pollution are now compromising public health, and there are many fishing families starving because of the tremendous decrease in fish populations due to heavy pollution, particularly from sewage and other organic matter.[52]

Beauty before: **images below**
Lake Cisanti (1500m above sea level). This is one of the water sources that feeds the Citarum. The lake receives its water directly from Wayang Mountain.



This pollution also means that the river water upstream of Saguling Dam is classified as "red"[53], unable to support biological functions and unsuitable for leisure activities, aquatic sports and aquaculture[54], while water in the Saguling Dam itself did not meet quality standards.[55]

In response to pollution of the Citarum River, the Ministry of Environment launched in 1989 the "Program Kali Bersih", or "PROKASIH", with the aim of improving water quality through the installation of industrial wastewater treatment plants (WWTPs) and communal domestic treatment plants. Although PROKASIH claimed that levels of pollution in industrial wastewater discharges had been reduced[56], the water quality since PROKASIH was launched in 1989 unfortunately has yet to show any improvement, and has even deteriorated. To date, the water quality of the Citarum River has never met the water quality standards since the programme was established in 1989.[57]

Following the failure of the PROKASIH programme, in 2007 the Indonesian government prepared an integrated recovery programme, and outlined a roadmap – the Integrated Citarum Water Resources Management Investment Program (ICWRMIP).[58] This still operates continuously but with little effect, as the condition of the Citarum River continues to deteriorate.

Efforts to clean up the Citarum River received a major boost in 2008, with the Asian Development Bank (ADB)'s approval of a $500 US dollar million multi-tranche loan package, initially focused on providing safe water supplies and sanitation facilities for poor families.[59] It should be noted that the problem of hazardous chemical pollution being discharged in complex industrial effluents is not addressed specifically by either of these programmes.

Pollution after:
images (on the left)
The PT Gistex facility discharges wastewater containing toxic and hazardous chemicals into the river; the shores of the Citarum are littered with waste.
image (on the right)
A pipe in the Padalarang area, discharging hazardous chemicals into the Cihaur river, a tributary of the Citarumm

Industrial pollution in the Citarum River

Although the visible problem of garbage and untreated domestic wastewater in the Citarum is severe, industrial discharges are also an important contributor to its pollution. While the overall quantity discharged is less than the domestic effluent, the authorities report that industrial wastewater is more concentrated and contains hazardous materials.[60] In addition, many hazardous chemicals in industrial wastewater may be persistent, and can therefore remain in the river for long periods of time after their release. Some are able to bioaccumulate. The pollution load from industry (based on certain general parameters) is reported to be the single largest source, greater than either domestic or agricultural sources.[61]

For example, a recent assessment of multiple sources of water pollution in the Upper Citarum[62] found that overall pollution levels were mainly determined by industrial activities in the lower reaches of this part of the river. At that time, more than 800 textile factories were operating in and around Majalaya, south of Bandung. However, pollution of the Citarum begins upstream, close to its source, mainly from agriculture, where contamination with hazardous and persistent organochlorine pesticides such as DDT (which has been banned in Indonesia for many years[63]) and lindane were found.[64]

Previous studies on the industrial pollution of the Citarum River have generally focussed on heavy metals, due to their persistence and the ability of some metals to accumulate in the food chain[65], but have not considered hazardous organic chemicals, some of which can be toxic, persistent, or bioaccumulative.[66]

A recent study found that concentrations in fish of the heavy metals copper, lead and nickel generally increased along the river, upstream to downstream. Samples were taken at five locations; two of these were industrial areas dominated by the textile industry. Seven metal industries were also identified along the Upper Citarum as potential sources of copper, along with agriculture. In addition, high concentrations of mercury (53ppm) were found in fish at Bantar Panjang, which is predominantly an agricultural area, compared to other sampling points. The potential source of mercury was identified as artisanal processing of gold in the Bantar Panjang area.[67]

Pollution from heavy metals is clearly a problem that needs to be urgently addressed, firstly by identifying its source. Industrial sources could include any of the large numbers of textile processing facilities, as well as metal processing, chemical, and other industrial facilities. However, the problem of the discharge of hazardous organic chemicals by industry and its consequences has barely begun to be addressed in Indonesia, either by regulatory standards or scientific monitoring. Evidence of pollution by hazardous chemicals may be less visible, however it can pose a serious and long-term threat to both human health and the environment.

image A Greenpeace activist wearing a protective suit takes a water sample from the Cihaur River, a tributary of the Citarum River, near Jalan Raya Cipendeuy, Padalarang, West Bandung Regency.

Revealing the threat of unknown chemicals

A previous investigation in 2012 undertaken by Greenpeace Southeast Asia and WALHI Jabar, with the assistance of the Institute of Ecology, Padjadjaran University, and Lab Afiliasi Kimia, University of Indonesia, assessed the impact of industrial pollution on the Citarum. Research measured the quality of river water or discharged wastewater at 10 locations, from a pristine wellspring at its source, to the end of the river.[68] Several anonymous industrial discharge canals or outfalls (also known as "phantom pipes") were sampled, together with river water and river sediments. As well as measuring concentrations of heavy metals and other typical water pollution parameters, the samples were screened for hazardous organic chemicals.

Results show the presence of hazardous chemicals in wastewater samples, including heavy metals such as mercury, hexavalent chromium, lead and cadmium. River sediments were also analysed, with the results showing that sediments at some sampling points have elevated levels of chromium, copper and lead.[69]

One or more hazardous organic chemicals were also detected in some wastewater samples and one river water sample. These were:

- Phthalates, including DEHP, DiBP, DBP and DEP,[70] which were detected in five out of the seven wastewater samples. DEHP, DiBP and DBP are classified as "toxic to the reproductive system".[71]
- BHT[72], which was detected in six of the wastewater samples and in one river water sample, and *p*-chlorocresol[73], which was detected in wastewater at one site; both chemicals are classified as toxic to aquatic life.[74]

The study also highlighted extreme variations of acidity in the water samples. Water from four wastewater samples and one river water sample was highly alkaline (between pH9 & 10), a characteristic of some industrial discharges, including some examples of wastewater from certain textile manufacturing processes. Textile facilities are known to be present close to most of these sampling points. In addition, one sample of wastewater was very acidic, at pH3. Levels of pH above 9 and below 6 alter the normal chemical reactions in aquatic ecosystems, and can be harmful to aquatic life. In addition to the very high BOD[75] and COD[76] values in some wastewater samples, the investigation also showed that each sampling site was contaminated with surfactants. Many of these are toxic, primarily due to their ability to reduce surface water tension and impact animals that depend on this. The source of the metals and organic pollutants, and the relative contribution made by the textile industry in the areas sampled, is not known, although textile facilities are dominant in the area.

This study provides examples of the serious situation faced by the Citarum River, raising further concerns about pollution from the discharge of hazardous chemicals, in addition to the heavy metals known to be present in river sediments. The discharge of these substances by all industries in Indonesia needs urgent investigation as a first step towards eliminating their discharge. However, the adequacy of the current regulatory system and its enforcement are also of concern.

Most of the major rivers on Java are badly polluted with a combination of untreated domestic wastes and largely from uncontrolled industrial effluents.

all images © Andri Tambunan / Greenpeace

image The PT Gistex facility discharges industrial wastewater containing hazardous chemicals into the Citarum River.

inset Local residents of Ciwalengke Village wash clothes and dishes with water from the Citarum River, into whiich hazardous chemicals are discharged; many villagers suffer skin irritations.

#4

Shifting from control towards prevention

Public policies to address water pollution in Indonesia rely on a pollution control approach, rather than pollution prevention. National and provincial governments implement quality standards and requirements. However, these only cover a limited range of parameters. Water quality standards define the maximum levels of a limited range of pollutants and parameters, to achieve the required level of water quality in any water body, which is then classified as I, II, III or IV according to its usage.[77]

Limits on the concentration of certain pollutants and parameters in discharged effluent from industry are set by a 1995 regulation[78] for 21 types of industry. A further 16 types of industrial activity are regulated by other ministerial decrees. Beyond general parameters such as BOD, COD and TSS,[79] the standard set for the textile industry only lists chromium, phenols, ammonia and sulphides, for the various types of textiles processing.[80] No other hazardous organic chemicals are listed, such as the NPs/ NPEs found by Greenpeace International in the wastewater samples of PT Gistex, or other chemicals commonly released in textile manufacturing wastewaters, such as phthalates. In addition, there are no limits for heavy metals apart from chromium.

This system has a number of weaknesses. Firstly, it is based wholly on allowable limits for hazardous chemicals, rather than preventing their use and release. Secondly, the standards only cover a very limited range of parameters and chemicals, which do not reflect the reality of complex industrial effluents and the range of hazardous chemicals employed by the textile-manufacturing sector. Thirdly, there is a lack of capacity to detect violations of the standards (uncovered by routine or unannounced monitoring by the government authorities, self-reporting by the industry concerned or monitoring and reporting by the community or the media), and to respond quickly and decisively when violations occur. **Finally, there is a lack of easy access to information for the public on the results from monitoring of wastewaters.**

Access to information – fact vs fiction

Indonesian law gives legal guarantees to every individual to gain access to information, and to justice, in order to fulfil their right to a healthy environment.[81] Similarly, regulations on water quality state that **"every person has an equal right to obtain information on the status of water quality and the management of water quality and water pollution control"**, including the results of monitoring for compliance with regulations.[82] Companies are also "obliged to provide correct information about the implementation of the obligations of the management of water quality and water pollution control"[83] in order to assess the compliance and management of business/activities in relation to the legislation.[84] A more recent law[85] on the disclosure of information to the public states that every public entity has a right to have open access to information.

BOX 6

The PROPER programme – half-hearted transparency?

The so-called Public Disclosure of Industrial Pollution (PROPER) approach in Indonesia was established in 1995, and aims to reduce industrial pollution via public disclosure, despite the fact that it does not require any disclosure on releases to the environment. It was developed and tested by the country's National Pollution Control Agency (BAPEDAL), together with the World Bank. The programme assesses compliance with a number of environmental regulations (air pollution, water pollution, hazardous wastes management, environmental impact assessment, and marine pollution), based on self-reporting by companies.[86] Around 1,750 companies were expected to participate in 2009, and an increase in the numbers of companies complying with the regulations is reported.[87] Parts of the programme are devolved to provincial governments for implementation.

A colour-coded rating system (**gold**, **green**, **blue**, **red** and **black**) is used to grade factories' performance against set benchmarks, corresponding to the different levels of performance and compliance with pollution control regulations. The gold and green ratings represent performance beyond compliance[88], while the black rating is poor. Blue is given to companies that are in compliance with regulations. Companies are encouraged to eventually comply with standards by using non-regulatory channels, such as public and social recognition of efforts to reduce pollution. An incentive to improve performance is provided by the national publication of company performance ratings.

A study found that the "key means by which PROPER spurs abatement is improving factory managers' information about their own plants' emissions", but that public pressure was of equal importance and "simply supplying new information to plant managers without making that information public may not be sufficient to motivate significant abatement".[89] However, the PROPER programme is not transparent. The published information is limited to the final result of the government's assessment, in the form of the colour rank, while the information that this assessment is based on – the types, amounts, concentrations, and locations of the pollutants generated by each activity – is not published. Therefore, there is no public scrutiny of the accuracy of the ratings.

The PROPER programme is even more seriously limited by the very scope of the regulatory requirements; the discharge of wastewater is only evaluated in relation to the limited parameters in the Government Standards (see above). For example, for textiles, most heavy metals and other potentially hazardous chemicals (apart from phenols as a general category) are beyond the scope of these standards, and therefore no reporting on the emission and reduction of these hazardous chemicals is required to achieve a blue, green or gold rating under the PROPER programme.

The PROPER programme's colour-coded rating system

Most heavy metals and other potentially hazardous chemicals (apart from phenols as a general category) are beyond the scope of the PROPER programme rating system.

In reality, monitoring data on compliance with regulations on wastewater discharges is not readily available, it is not published by the media or available on the internet. The response to requests for information varies between the different national and local enforcement authorities. The process for obtaining information can be bureaucratic; requests may have to be made in writing to various different authorities.

Even the PROPER programme (see Box 6), a government scheme designed to reduce pollution from industry by publicising companies performance in meeting various environmental regulations, does not report on monitoring data to show compliance or non-compliance with the regulations.

Relaxed regard for regulations

It is hardly surprising that the level of awareness, participation, and adherence to the regulations by industry is still very low in practice. A 2009 survey found that only 47.2% (83 out of 176) industrial facilities in Bandung Regency treated their wastewater using a WWTP prior to release.[90] However, out of those that did use a WWTP, the discharges of only 40% (33 industries) met the Wastewater Quality Standards.[91]

Recently, a total of 29 garment and textile companies have received sanctions from the Environment Agency (BPLHD) of the province of Central Java, as a result of violating regulations on the carrying capacity, environmental sustainability, and disposal of industrial waste, resulting in environmental pollution. The authorities suggest that many violations of the environmental regulations are occurring undetected. During the rainy season, when the detection of pollution incidents is difficult due to the high water levels, contamination is spread further afield in flood-affected areas. However, details about the types of contaminants, and whether hazardous substances were released, are not provided.[92]

In West Java, 14 companies representing various industries – including garment manufacturers – have received administrative and criminal sanctions for contamination of the Citarum watershed with hazardous wastes. However, the authorities note that there are countless other cases of contamination with hazardous wastes in the Citarum.[93]

There are also examples of wastewater being disposed of illegally, for example via underground pipes in the Majalaya district, where it is apparently impossible for the local authorities to trace the source of pollution back to the responsible party due to the many different companies discharging into the same pipe.[94]

These examples illustrate that industrial discharges to rivers in Indonesia are not consistently monitored for compliance with the standards, that breaches are a regular occurrence, that sanctions are not enforced frequently, and that illegal discharges can also take place. If these practices continue, even with improved standards that take account of a broader range of hazardous organic chemicals and strong monitoring and enforcement, pollution by hazardous substances will continue. The principle of "Pollution Control", in which "acceptable levels" of a pollutant are allowed, is insufficient to protect human health and the environment, especially against toxic chemicals persistent in nature, or able to bioaccumulate. There needs to be a paradigm shift away from reliance on this reactive approach towards a preventive one, which eliminates the use of hazardous chemicals at source, through clean production and progressive substitution with safer alternatives.

There needs to be a paradigm shift away from reliance on this reactive approach towards a preventive one, which eliminates the use of hazardous chemicals at source, through clean production and progressive substitution with safer alternatives.

image Greenpeace activists tag a discharge pipe from factories in the Majalaya area of Bandung, West Java, warning "This Pipe is Discharging Hazardous Chemicals". Greenpeace urges the Indonesian government to take immediate action to stop industry from discharging hazardous chemicals to the Citarum River and other waterways.

Towards pollution prevention

A recent regulation[95] provides a legal basis for the development of a number of new policy instruments for preventing pollution, and most importantly includes reference to both the "precautionary" and "polluter pays" principles.[96] There are also signs that authorities in Indonesia are already considering a new approach based on the transparency of information on hazardous chemicals discharges.

Following Greenpeace's survey where anonymous outfalls were sampled and signposted, officials from the EPA of West Java Province (BPLHD) for West Bandung Regency have identified and signposted 21 wastewater discharges from 13 companies, labelling them with the name of the companies responsible.[97] The signpost has room for up to four company names, plus the name and signature of the team member who conducted the signposting.

The government of West Java has started to prepare a questionnaire for all industrial sectors, to create an inventory of hazardous chemicals used by industries, with a view to publishing it online. There is also a national initiative to develop a hazardous chemicals inventory known as the "national management information system for hazardous chemicals", and to establish an emergency response system involving industry and local government officials.[98,99] Such an inventory would be a useful basis for identifying the use of hazardous chemicals in Indonesia, and would be a first step towards the development of a priority list of hazardous substances to be reduced and eliminated. The collection of such information is vital in Indonesia; in common with many Asian countries, there is little knowledge in Indonesia on the production and import of chemicals, the quantities concerned, their use, and whether they are potentially hazardous.

There is also a National Policy on Clean Production, agreed in 2003, as a platform for central and regional governments to supervise and develop the Clean Production programme. The Indonesian Centre for Clean Production (ICCP) in Serpong, West Java, Indonesia, was built in 2004. However, most of the successes so far concern energy saving[100], and not the management of chemicals.[101] Therefore, the programme has had little impact on reducing the use of hazardous chemicals, and needs the participation of larger-scale industries. With a renewed focus on hazardous chemicals, however, this programme and the ICCP could be an important resource for implementing a zero discharge plan.

image © Andri Tambunan / Greenpeace

image A resident of Ciwalengke Village uses water pitched from a nearby well to wash rice.

© Yudhi Mahatma / Greenpeace

image Adidas retailer.
Pacific Place Mall, Jakarta.

#5

Global fashion brands and the textiles industry in Indonesia

After China and India, Indonesia is the third fastest-growing economy among the world's leading industrial countries (G20), and the largest economy in southeast Asia. Its growth rate is predicted to exceed that of China and India within 10 years, and it is said to be "determined to become the region's production hub and the factory for South East Asia".[102]

Manufacturing is the most important contributor to Indonesia's GDP, representing more than 27% during the 2003 to 2007, and is concentrated on the island of Java, where more than 80% of total industrial manufacturing is located.[103] West Java accounted for 37% of this figure in 2007, where the highest density of employment in manufacturing facilities is in Bandung.[104] Many industrial facilities are located in the Citarum River watershed, due to infrastructure, the availability of land and natural resources, and proximity to Jakarta. The various manufacturing industries that operate in the watershed are primarily textiles, electronics, pharmaceuticals, leather, and food.

BOX 7

Textiles on the Citarum River

There is a long history of textiles dyeing in the Citarum River watershed, named after the abundance of tarum, a plant that has been widely cultivated as the source of natural indigo dye since the 4th century, and traditionally used by batik makers. However, the long and complicated process required to extract colour from the indigo plant meant that, ultimately, batik makers preferred the new synthetic chemical dyes.[105] Today, the tarum plant is no longer grown in the Citarum watershed, despite the fact that the cultivation and processing of tarum and other indigo-based dyes used to be such a vital part of its culture. No effort has been made to develop newer, more efficient, technology-driven ways to produce indigo-based dyes.

Textile manufacturing continues to be vitally important today. Chemical synthetic dyes have largely replaced the traditional tarum, together with the use of many other synthetic chemicals, some of which are hazardous. Some 60% of national textile production takes place in the Citarum watershed[106], and the textiles industry has the greatest number of industrial facilities of any sector in the Citarum watershed as a whole, representing 46% of all industry.[107] However, the modern textile industry has also played its part in the devastation of the Citarum River.

image GAP retailer. Senayan City Mall, Jakarta.

The modern textile industry has been established in Indonesia for many years[108], and is highly concentrated on the island of Java, and specifically West Java[109] – where low-end, large-scale production takes place – compared to the niche manufacturing and marketing on the island of Bali.[110] It is dominated by synthetic yarns, particularly polyester, and is an important contributor to the economy and to employment. Despite problems such as outdated machinery and the lack of competitiveness within the region, it still shows huge economic potential.[111] An estimated 11% of the total industrial labour force works in textiles[112], representing 1.3 million people as of 2011.[113]

In 2010, textiles accounted for 8.9% of the country's total exports[114], and textiles, leather products, and footwear contributed 9% to Indonesia's GDP in 2010.[115] Indonesia is among the Top10 clothing-exporting countries in the world by value, moving from 10th position in 1990 and 2000[116] to 8th in 2011, according to WTO data.[117] It was also the 11th largest exporter of textiles in 2011, an increase of 16% from 2010.[118]

Various leading international apparel brands use Indonesia as a manufacturing base for their global exports and about 61% of manufactured garments are exported to international markets. In recent years, exports have increased. According to the Ministry of Trade, exports of textiles and garments rose by 19.7% to $12.1bn US dollars between 2010 and 2011. The US is Indonesia's largest market for garments and textiles, and accounts for 36% of total exports, with 15% going to the EU and 5% to Japan.[119] Woven clothing, underwear, and knitted or crocheted clothing, together made up nearly 60% of the total value of textile exports between 2007 and 2011. Recently, there has been an increase in the export of value-added items such as suits, jackets, dresses and trousers, for both men and women, compared to more basic items.[120]

The discharge of hazardous chemicals into waterways from the manufacture of clothing for global fashion brands in Indonesia is likely to be common, though as yet unquantified. In addition to the findings of Greenpeace's investigation into wastewater discharges from PT Gistex (see Chapter 2), there is other evidence that the persistent and hazardous chemicals NPs/NPEs are probably being discharged by other textile facilities in Indonesia. Six out of eight samples from garments manufactured in Indonesia that were tested as part of an investigation by Greenpeace International in 2012[121] were found to contain NPEs. These included items of clothing sold by Armani, Gap, Esprit, Mango, and Marks & Spencer. The presence of hazardous chemicals such as NPEs in a product generally indicates that they are used in its manufacture, with a high probability that they are being discharged into local water systems within manufacturing wastewaters. It is impossible to identify the exact locations of manufacture from the products alone. However, these findings show that NPEs are used in parts of the textile industry in Indonesia, as well as globally, during the manufacture of products for a host of major international brands.

Various leading international apparel brands use Indonesia as a manufacturing base for their global exports and about 61% of manufactured garments are exported to international markets.

© Andri Tambunan / Greenpeace

Connections to multinational and domestic brands

Every brand is responsible for ensuring that its global supply chain operations – either directly or indirectly – do not cause the release of hazardous chemicals into the environment. Lacking sufficient oversight of these global supply chains, or claiming ignorance about the hazardous chemicals released by suppliers providing inputs into production processes around the world, are not acceptable excuses. Brands have a duty of care to their customers and to the local communities forced to share their water systems with industry, to act as custodians of these water systems and to ensure that any water supplies are not treated like private sewers.

During February and March 2013, Greenpeace International sent letters[122] via courier to the Indonesia-based supplier PT Gistex Group, as well as to the head offices of the following international apparel brands, requesting comment on any business relationship with PT Gistex Group (and/or any of the associated companies PT Gistex Group directs and/or controls):

> Adidas Group, Ascena Retail Group (includes Lane Bryant), Brooks Brothers, C&A, Duro Industries, Esprit, Gap Inc. (includes Banana Republic, Gap and Old Navy), Guess, H&M, Lecien, Limited Brands (includes Mast Industries), Macy's, Manhyo KK, Marks & Spencer, Marubeni, Nordstrom, S Oliver, Otto Group (includes Otto Sumisho), Pacific Brands Workwear, JC Penney (includes Liz Claiborne), PVH Corp (includes Tommy Hilfiger), Specialty Fashion Group, Sun Capital Partners (includes Kellwood), The Row LLC, Toray Industries, Triumph International, WalMart, Walt Disney, and Yamamoto Sada.

In its March 2013 response to Greenpeace International, PT Gistex Group claimed that it "PT Gistex ... has always [been] concerned for the environment and our society. Our facility is equipped with wastewater treatment to avoid polluting the environment."[123]

C&A, PVH Corp, Limited Brands, Otto Group and S Oliver have each respectively expressed no known business relationship between each of their companies and their respective products and PT Gistex Group and/or any of the associated companies PT Gistex Group directs and/or controls.

Triumph International states "...Triumph International has no business relationship with the company you reference, PT Gistex Textile Division, or any of its affiliated companies". Walt Disney Company states: "In response to your initial inquiry, through internet research we have identified six facilities we believe to be owned or controlled by PT Gistex. Our records indicate that five of those six facilities have NEVER BEEN AUTHORIZED by The Walt Disney Company for the production of Disney-branded product. The authorization for the sixth facility, PT Gistex Garment Division .... EXPIRED in 2010". Walmart replied that PT Gistex Textile Division "is not a current, authorized supplier to Walmart. Our records indicate that they were deactivated in 2009 and no orders have been placed with them since that time." Esprit indicated a single last order via PT Gistex Group, in March 2011.

Despite multiple requests to do so, **Adidas Group** has yet to provide Greenpeace with a clear and complete explanation in writing of its past or current business relationship to all parts of PT Gistex Group. In 2012, Adidas Group confirmed having an indirect sourcing relationship, through a licensee, with PT Gistex Garment Division, and denied having a relationship with PT Gistex Textiles Division.[124] This is in line with its most recent supplier lists (as of 1 January 2012, available on its website), which includes PT Gistex Garment Division.[125] Despite multiple requests for further clarification, it is unclear whether Adidas Group has conducted a thorough review of its global supply chain records, including an assessment of all second or third-tier inputs (including all "wet" process inputs) in any and all Adidas-branded products (licensed or otherwise), with regard to business with PT Gistex.

Brooks Brothers acknowledges a business relationship within PT Gistex Group: "We are not currently working with the wet processing part of this mill but rather their garment making factory. Our fabric is printed and imported from another mill in Indonesia."[126] **H&M**'s website[127] includes PT Gistex Garment Division in its current list of suppliers and confirmed its accuracy to Greenpeace.

In sum, Adidas Group, Brooks Brothers, Gap Inc., H&M and Marubeni have had a business relationship in the recent past with at least one part of PT Gistex Group, the company associated with the polluting facility (PT Gistex Textile Division) in Indonesia, which Greenpeace sampled in 2012.

Neither Ascena Retail Group, Duro Industries, Gap, Guess, Lecien, Macy's, Manhyo KK, Marks & Spencer, Marubeni, Nordstrom, Pacific Brands Workwear, JC Penney, The Row LLC, Specialty Fashion Group, Sun Capital Partners, Toray Industries, nor Yamamoto Sada had responded to Greenpeace's couriered request for comment by this report's production deadline of 9 April 2013.

However, export information shows that PT Gistex Group (and/or one of the associated companies it directs or controls) has had a business relationship with **Gap Inc.** (including its wholly owned subsidiaries **Old Navy** and **Banana Republic**) and the **Marubeni Corporation**.[128]

As of 1 March 2013, the public website of **PT Gistex Group** included the logos of **Mary & Kate Ashley**, **Esprit**, **Gap**, **Guess**, **Kellwood**, **Marubeni**, and **S Oliver**, and mentions **C&A**, **Esprit**, **Kellwood**, **Lane Bryant**, **Lecien**, **Liz Claiborne** (controlled by **JC Penney**), **Manhyo KK**, **Mast Industries** (controlled by **Limited Brands**), **Otto Sumisho**, **Toray**, **Charles Vogele**, **Yamasada** and **Yamamoto** as "recent customers".

Some of the brands linked to PT Gistex Group have made public statements about the need to avoid environmental pollution, or already made a commitment to Detox.[129] According to their respective websites, some seem to be concerned about the environmental impact from the manufacture of their products. However, this investigation found that their past or current suppliers are releasing toxic chemicals into surrounding water and local river systems.

GAP: "For Gap Inc, environmental responsibility means far more than being "green" or selling green products. We view it as connected to every aspect of our business, from the manufacture of our clothes to how they are packaged and shipped to the design of our stores."[130]

Marubeni: "Preserving the global environment is at the very core of Marubeni's business activities."[131]

Other brands, including Brooks Brothers[132], do not publish a position on their environmental responsibilities.

all images © Andri Tambunan / Greenpeace

image Industrial wastewater discharged into the Citarum River by the PT Gistex facility.

inset A resident of Citeureup Village catches fish in the Citarum River.

#6

Time to Detox Indonesia's waterways

This investigation provides a snapshot of the discharge of hazardous chemicals into one of Indonesia's most important rivers. Although the facility in this report can't be taken as representative – given the scale of textile manufacturing in Indonesia – such discharges are likely to be emblematic of a wider problem, representing the tip of the iceberg.

This report clearly demonstrates that regulation in Indonesia currently fails to provide adequate protection against widespread pollution. Standards are not comprehensive or stringent enough, and there is little enforcement of the standards that do exist.

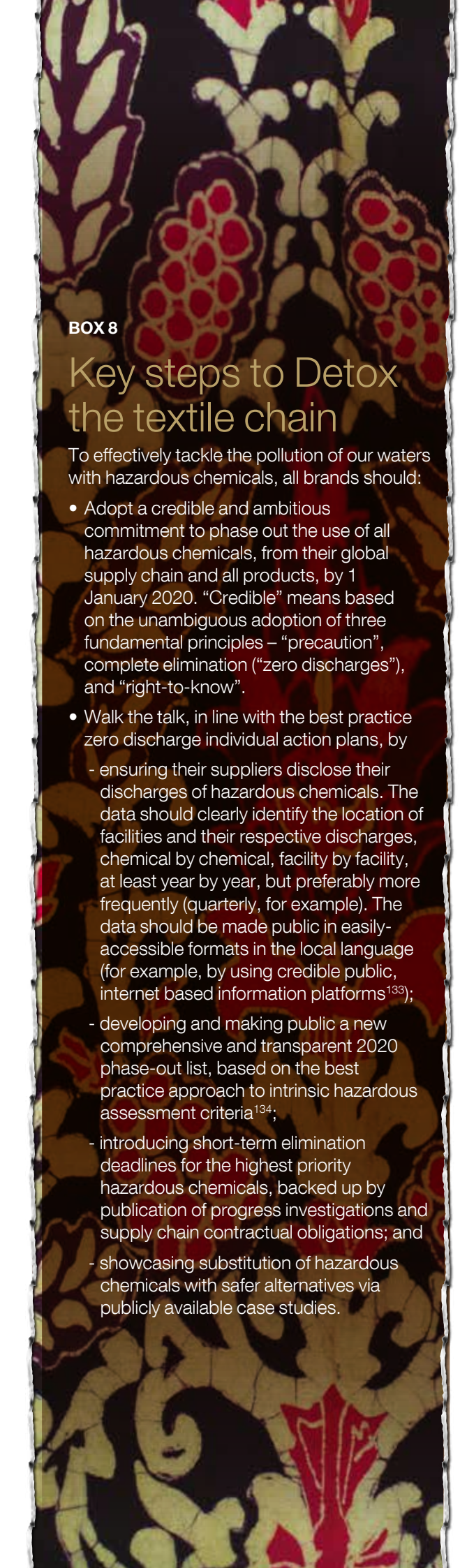
Moreover, the discharge of some hazardous, persistent chemicals is taking place despite the presence of wastewater treatment plants. A new strategy needs to be adopted to stop such chemicals being released into the environment – one that ensures the rapid and transparent elimination of the use of hazardous chemicals at source and their replacement with non-hazardous alternatives. Companies and global brands have a responsibility to go beyond lax and minimal government standards and actively encourage governments to improve their regulation of hazardous substances.

The role of brands

The textile industry has an important role in the industrialisation and development of many countries in the Global South. **Major brands with supply chains in these countries are in a unique position to have a positive influence in reducing the environmental impacts of textile manufacturing – and in the process to help bring about the shift away from hazardous and environmentally damaging chemicals across all industries.**

Transparency of information, between suppliers, brands and the public, as well as full supplier engagement through hazardous substance use inventories and the development of comprehensive lists of chemicals for elimination by brands, are important to accelerate the elimination of the use of hazardous substances and their substitution with safer alternatives. The criteria and data that define intrinsic properties of chemicals and classify them for elimination should be made fully transparent. The government needs to request that the chemical industry provides information on the intrinsic properties of chemicals, which should also be passed down the supply chain. These measures would allow the supply chain to make more informed choices on chemicals use.

Brands can also help to change the attitude of government authorities on the disclosure of basic information on hazardous chemicals used or on industrial discharges. **By ensuring that information on the use and release of hazardous substances by their suppliers is made available to the public, creating pressure to eliminate the use of such chemicals, global brands can demonstrate the benefits of a new and more open system.**



BOX 8

Key steps to Detox the textile chain

To effectively tackle the pollution of our waters with hazardous chemicals, all brands should:

- Adopt a credible and ambitious commitment to phase out the use of all hazardous chemicals, from their global supply chain and all products, by 1 January 2020. "Credible" means based on the unambiguous adoption of three fundamental principles – "precaution", complete elimination ("zero discharges"), and "right-to-know".
- Walk the talk, in line with the best practice zero discharge individual action plans, by
  - ensuring their suppliers disclose their discharges of hazardous chemicals. The data should clearly identify the location of facilities and their respective discharges, chemical by chemical, facility by facility, at least year by year, but preferably more frequently (quarterly, for example). The data should be made public in easily-accessible formats in the local language (for example, by using credible public, internet based information platforms[133]);
  - developing and making public a new comprehensive and transparent 2020 phase-out list, based on the best practice approach to intrinsic hazardous assessment criteria[134];
  - introducing short-term elimination deadlines for the highest priority hazardous chemicals, backed up by publication of progress investigations and supply chain contractual obligations; and
  - showcasing substitution of hazardous chemicals with safer alternatives via publicly available case studies.

Following Greenpeace's Detox campaign, which started in 2011, a number of sportswear and fashion brands – including several retailers and luxury brands – took up the Greenpeace Detox challenge[135] and made individual commitments[136] to eliminate all discharges of all hazardous substances by 2020.

Each brand or supplier must ensure their individual corporate commitment to Detox is continually upgraded to remain credible according to the increasing scale and resulting urgency of global water contamination. As the deadline for achieving zero discharges draws nearer, the need for more concrete implementation plans grows increasingly urgent as does the need to create a clear list of chemicals to be eliminated by 2020. Commitments of principle need to be accompanied by clear steps and deadlines on key implementation elements (see Box 8).

The steps taken on the ground to eliminate the discharge of hazardous chemicals from textile facilities must also be taken by all industrial sectors that contribute to water pollution in Indonesia. This will also require the Indonesian government to implement comprehensive chemical management policies, so that hazardous chemicals can be regulated and ultimately eliminated.

Greenpeace calls on the Indonesian government to adopt:

1) A political commitment to "zero discharge"[137] of all hazardous chemicals within one generation[138], based on the precautionary principle and a preventative approach to chemical management. This commitment must have the substitution principle at its core, and include producer responsibility[139] in order to drive innovation and toxics-use elimination.

2) An implementation plan to establish:

   (a) a dynamic priority hazardous chemical list, for immediate action.[140]

   As mandated by the current regulation, there is an urgent need to establish the National Commission for Hazardous Materials[141] immediately. This commission will be responsible for evaluating chemicals on the market, and recommending those that need to be registered to be added to a list of hazardous materials, as either restricted or banned.

A dynamic hazardous chemicals list could be derived from the evaluation of a national chemical inventory through the use of a comprehensive hazard-based and transparent screening methodology. Therefore, the process of creating an inventory of chemicals that is currently being discussed by government must include all chemicals on the market, not only those already listed as hazardous materials according to current regulation. The current discharge permits need to be broadened to include more hazardous substances, their limits should be re-focused towards the progressive reduction and ultimate elimination of the discharge of all hazardous chemicals, in line with the "zero discharge" goal above.

(b) intermediate targets to meet the generation goal above; and

(c) a publicly available register of data about discharge, emissions and losses of hazardous chemicals. Information from PRTRs can contribute to achieving significant reductions in emissions of hazardous substances.[142] All current government permits, research and information on discharges and releases of hazardous chemicals by industry should be immediately and easily accessible to the public. Indonesia's widely acclaimed public disclosure programme, PROPER, must be reformed to require the disclosure of all releases, emissions and losses of hazardous chemicals to the environment, beyond the very limited scope of current regulatory requirements. It must, as a bare minimum, provide full transparency by disclosing the data that serves as the basis for the colour ratings of company performance. It needs to have third party verification and must invite maximum public scrutiny.

3) Measures to ensure infrastructure and policies are in place to support implementation, including:

- identifying priority chemical restrictions;
- policies and regulations that require mandatory audits and planning;
- the provision of technical help and appropriate financial incentives; and
- research and support for innovation in green chemistry.

Finally, it will be crucial to ensure the enforcement of existing and future more stringent regulations via a higher number of controls and inspectors and greater transparency concerning inspections and sanctions.

The role of "People Power"

As global citizens and consumers we can also use our influence to play a key role in creating a toxic-free future.

As global citizens we can collectively:

- Choose to buy fewer new clothing products, and instead buy second-hand or vintage clothes where possible. This can also involve re-purposing and re-using older items to create "new" pieces for our wardrobes, taking part in clothes swaps, and even sharing items with friends.
- Influence brands to act responsibly on behalf of the planet and its people. The need for companies to make the right choices and protect future generations has never been greater than it is today. All brands need to be challenged on whether they have set a date for the elimination of the use of all hazardous chemicals in their supply chains and products, and on whether they are being transparent about their business practices and those of their suppliers. It is our water, and these are our products, and we have a right to know what is in them.
- Demand that governments act to restrict the production, import, and sale of products containing hazardous chemicals.

There's no time to waste. By acting together we can demand that governments and brands act NOW to Detox our rivers, Detox our clothing and ultimately, Detox our futures.

To find out more about how you can make your voice count visit:
www.greenpeace.org/detox

image Banana Republic retailer. Senayan City Mall, Jakarta.

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112 Business Vibes; Industry Insight (2013) op cit.

113 Global Business Guide Indonesia (2013) op cit.

114 Business Vibes; Industry Insight (2013) op cit. Exports in terms of monetary value.

115 Global Business Guide, Indonesia (2013 op cit.

116 Vickers A (2012), op cit.

117 World Trade Organisation (2012). Table 11.69, Leading exporters and importers of clothing, 2011, International Trade Statistics 2012, Merchandise Trade. http://www.wto.org/english/res_e/statis_e/its2012_e/its12_merch_trade_product_e.htm

118 World Trade Organisation (2012). Table 11.64, Leading exporters and importers of textiles, 2011, op.cit.

119 Global Business Guide Indonesia (2013), op cit.

120 Global Business Guide Indonesia (2013), op cit.

121 Greenpeace International (2012b) op cit.

122 During February and March, 2013, the courier company, Fedex, confirmed delivery of letters Greenpeace sent to the head offices of the PT Gistex Group, as well as the head offices of fashion/textile brands. These letters requested comment, re: the testing of samples from the aforementioned PT Gistex Group, and what business relationship the aforementioned fashion/textile brands had with any part of the PT Gistex Group. Greenpeace also had email and telephone communications with some of these fashion/textile brands.

123 Correspondence between PT Gistex Group and Greenpeace International between 20 and 27 March 2013, on file with Greenpeace International.

124 Correspondence between Adidas Group head office and Greenpeace International between 20 September 2012 and 27 March 2013, on file with Greenpeace International.

125 http://www.adidas group.com/en/sustainability/assets/factory_list/2012_Jan_Licensee_Factory_List.pdf
Row 165 PT Gistex Garment Division address, accessed 28 March 2013.

http://www.adidas-group.com/en/sustainability/assets/factory_list/2012_Jan_Global_Factory_List.pdf
Row 705 PT Shinko Toyobo Gistex Garment Division address, accessed 28 March 2013

126 Correspondence with complete response from Brook Brothers from 19 March 2013, on file with Greenpeace International.

127 http://about.hm.com/AboutSection/en/About/Sustainability/Commitments/Responsible-Partners/Supply-Chain/SupplierList.html, accessed 26/3/2013

128 Indonesian export data. Accessed March 2013 via panjiva.com

129 Adidas Group website.
http://www.adidas-group.com/en/sustainability/Stakeholders/Engagements/Civil_society/default.aspx
H&M website:
http://about.hm.com/AboutSection/en/About/Sustainability/Commitments/Use-Resources-Responsibly/Chemicals/Zero-Discharge.html

130 Gap Inc website. Environment
http://www.gapinc.com/content/gapinc/html/csr/environment.html

131 Marubeni website.
http://www.marubeni.com/csr_env/environment/index.html 13/3/13

132 http://www.brooksbrothers.com/about-us/social-compliance/ca-transparency-act,default,pg.html

133 For example, IPE in China.
www.ipe.org.cn/En/pollution/index.aspx

134 For example at least the precautionary and transparency levels of the Green Screen assessment criteria
http://www.cleanproduction.org/library/GreenScreen_v1_2-2e_CriteriaDetailed_2012_10_10w_all_Lists_vf.pdf

135 http://www.greenpeace.org/international/en/campaigns/toxics/water/detox/

136 See for example:
Limited Brands (Victoria's Secret): http://www.limitedbrands.com/assets/Environment/Limited%20Brands%20GP%20Detox%20Solution%20Commitment.pdf
Benetton: http://www.benettongroup.com/sites/all/temp/benetton_group_detox_commitment_1.pdf
G Star Raw: http://www.g-star.com/media/documents/G-Star%20Detox%20Solution%20Commitment%2029%20January%202013.pdf
Valentino: http://www.valentinofashiongroup.com/docs/VFG_Detox_Solution_Commitment.pdf

137 "Discharge" means all discharges, emissions and losses. In other words, all pathways of releases.

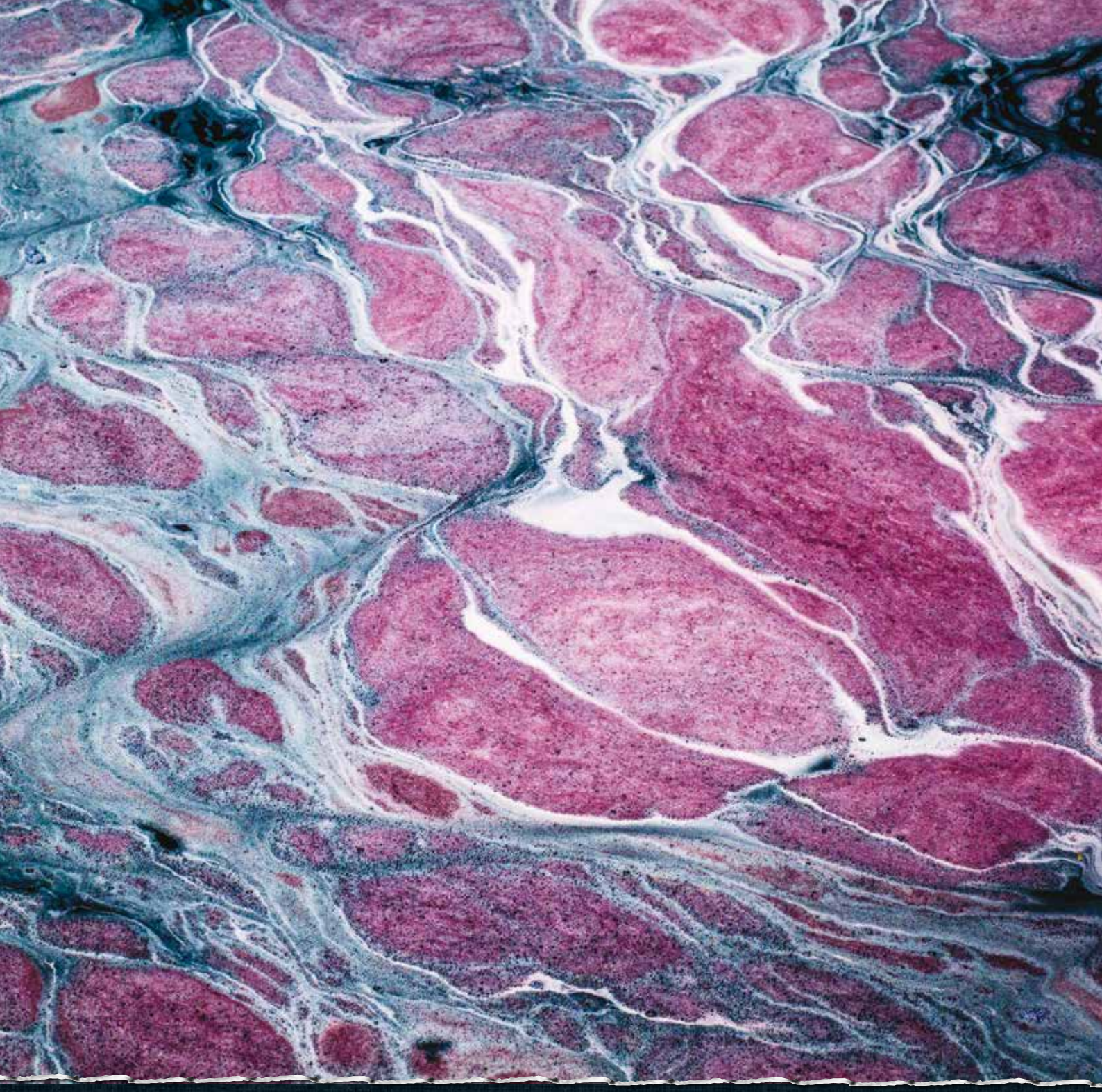
138 Typically, one generation is understood to be 20 to 25 years.

139 For example, "no data, no market" provisions.

140 Based on the eight basic intrinsic properties of hazardousness – persistence; bioaccumulation; toxicity; carcinogenic, mutagenic and reprotoxic; endocrine disruption; and equivalent concern.

141 Government Regulation No. 74, 2001 concerning Hazardous and Toxics Materials Management, currently being revised. Chapter I, Article 1 Chapter III, article 9, Chapter IV , article 21, concerning a Hazardous Materials Commission (komisi B3/tim teknis B3)

142 PRTRs have been shown to be effective in reducing the release of hazardous substances. For example, the Japanese PRTR, which was introduced in 2001 and covers 462 designated chemical substances (Class I) in 23 sectors and 34,830 facilities, shows a reduction of 24.5% in total annual releases (and waste transfers) of hazardous substances between 2001 and 2008. However, there was no significant reduction for facilities releasing smaller quantities of designated chemical substances (Class II), which are not required to disclose their releases publicly, see: Nakachi S (2010). The Pollutant Release and Transfer Register (PRTR) in Japan and Korean Toxic Releases Inventory (TRI)– an evaluation of their operation, Tokyo: Toxic Watch Network, p.13
http://toxwatch.net/en/news/sep2010-prtr-in-japan-and-korean-tri-an-evaluation-of-their-operation%e3%80%80/



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Greenpeace is an independent global campaigning organisation that acts to change attitudes and behaviour, to protect and conserve the environment and to promote peace.

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