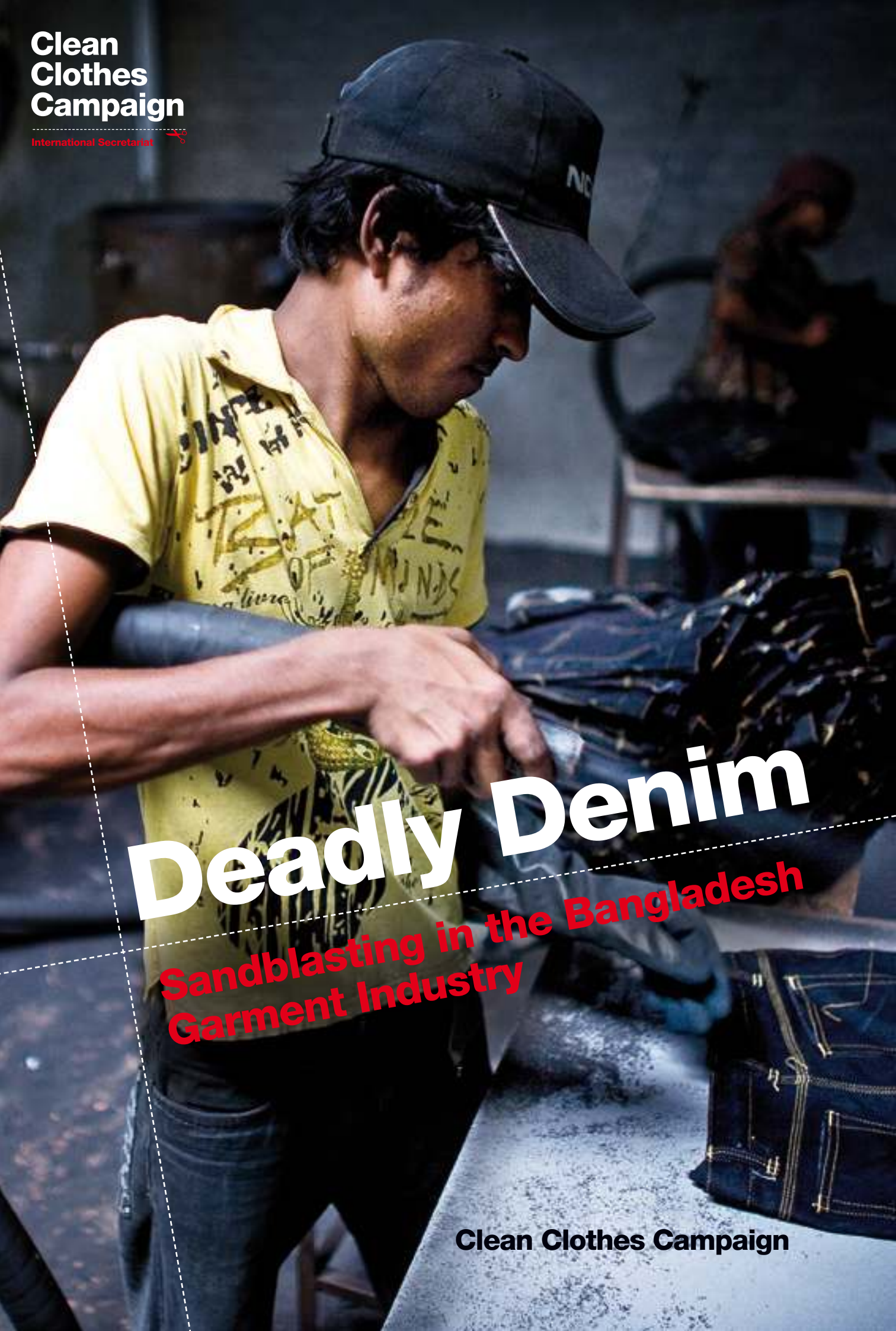

Clean Clothes Campaign

International Secretariat

Deadly Denim

Sandblasting in the Bangladesh Garment Industry

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March 2012

Study conducted by
AMRF in Association with CCC and NGWF

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Contents

Conservative estimates suggest Bangladesh has over 2,000 full time sand-blasters producing garments for export.

1 Executive Summary

Sandblasting has become the key method for finishing most modern jeans requiring that 'worn-out' look. Under the sandblasting process the denim is smoothed, shaped and cleaned by forcing abrasive particles across it at high speeds. The process is fast and cheap and demand for pre-worn denim has led to a massive rise in its use. But this fashion comes at a price: the health and even the lives of sandblasting workers.

There are two types of sandblasting process: **manual sandblasting** and **mechanical sandblasting**. Both can be deadly. In manual sandblasting, compressors are used to blow out sand under pressure through a gun in order to bleach and batter the denim. This process is done in the absence of sealed blasting cabinets and ventilation, exposing the operators directly to silica particles (tiny particles of blasted sand) that are released from the guns. This silica dust, if inhaled, can cause severe respiratory problems in workers. In cases of intense or long-term exposure, it may even lead to the contraction of fatal diseases such as silicosis and lung cancer.

Although the most common form of sandblasting is manual blasting, sandblasting can also be performed mechanically in blasting cabinets where the process is supposed to be more controlled. However this report shows that mechanical sandblasting as done in Bangladesh actually continues to expose workers to **silica dust.** Our research found that mechanical sandblasting is largely carried out in unsealed environments with little protection for workers, using inadequate safety equipment. As a result the use of this technique continues to expose workers to potentially fatal risk.

After the imposition of strict regulations on sandblasting in many European countries, the clothing industry has largely **outsourced** production to as yet unregulated regions such as Turkey, Bangladesh, and China. It was in Turkey that the negative health effects of this process in the garment industry were recognised, with Turkish doctors being the first to sound the alarm over silicosis amongst garment sandblasters. In 2005 the first major study to link sandblasting jeans with silicosis was published.

Since Turkey implemented a ban on sandblasting in 2009, pressure on brands to stop using manual sandblasting has increased. In Autumn 2010, the **Killer Jeans campaign** was launched adding to the public call for the abolition of the practice from the industry and many brands announced a voluntary ban on sandblasting. Yet few if any brands have provided clear information on how these bans are being implemented and no brand has yet agreed to take responsibility for identifying and treating affected workers in their supply chain.

Our study interviewed 73 workers in seven factories and conducted numerous **qualitative interviews** with **experts** in the industry and **workers** in a further two factories, making a total of nine factories in all. Well over 45 percent of interviewees recognized the logos of brands shown to them as being manufactured in the factories in which they worked. These brands included H&M, Levi's, C&A, D&G, Esprit, Lee, Zara and Diesel, all of whom, excepting D&G, claim to have banned sandblasting.

There is some evidence that **buyer bans** have had some impact on the use of sandblasting, including a shift away from manual sandblasting especially in the larger

factories and the closure of some sandblasting units. However, in general, the impact of ban has been patchy, poorly monitored and widely circumvented, at least in the majority of factories we investigated.

For example, we discovered that regardless of whether a brand has 'banned' sandblasting or not, manual sandblasting still takes place, often at night to avoid detection by audits or otherwise. It is clear that **sandblasting units are still open** in most factories used by brands and retailers. In addition smaller workshops reportedly still either only or predominately use manual sandblasting methods. Although it is possible to test for sandblasting this is not covered in buyer/audit visits. Indeed one manager interviewed believed buyers purposely do not test for sandblasting.

The failure of brands to **change their designs** or to increase production time to allow for suppliers to shift to the more labour intensive and slower finishing techniques also helps perpetuate the use – sometimes clandestine and sometimes overt – of sandblasting.

The report also uncovered a pressing need to **increase awareness** of the health risks of sandblasting among workers. This should be carried out as part of a wider effort to improve safety in the Bangladesh garment industry, whose occupational health and safety record is appalling, with scores of deaths and injuries in the sector every year.

Our research showed that although some workers were aware of the potential **dangers** of sandblasting they were prepared to work for the higher wages offered, despite knowing that their working life as a sandblaster may be short due to ill health. It also showed that the medical diagnosis and treatment available to workers is woefully inadequate and that awareness of the link between garment sandblasting and silicosis among the medical profession was almost non-existent.

We also found a problem of overlapping **commercial interests** with garment factories, media and health companies all held under the same umbrella group.

Given the obvious hazards of both manual and mechanical processes, brands must end not only manual but also mechanical sandblasting. In addition they should ensure that they cease production in any unit which carries out either manual or mechanical sandblasting production. Transparency in the supply chain is essential in ensuring proper monitoring of suppliers, and brands should publicly disclose locations of suppliers and sub-contracting where denim production and finishing is carried out.

This report shows that a voluntary company ban is simply not enough to stop workers from falling sick and dying from silicosis. Governments worldwide should therefore enforce a **national ban** on the process as well as, where relevant, enforcing import bans on garments which have been subjected to sandblasting.

Almost half of the 200 million pairs of jeans exported from Bangladesh each year are sandblasted.

2 Background

Denim became massively popular during the 1950s and in the mid 1980's manufacturers began to use techniques to 'distress' the denim in order to make them look worn. By the 1990's, pre worn-out jeans had became popular throughout the Western world ushering in the widespread adoption of sandblasting. It is estimated that almost half of the 200 million pairs of jeans exported from Bangladesh each year are sandblasted.

Sandblasting in the textile industry

Sandblasting in done using two different methods: manual sandblasting and mechanical sandblasting. Both can be deadly. In manual sandblasting, compressors are used to blow out sand under pressure through a gun in order to bleach and batter the denim. This process is done in the absence of sealed blasting cabinets and ventilation, exposing the operators directly to silica particles (tiny particles of blasted sand) that are released from the guns. This silica dust, if inhaled, can cause severe respiratory problems in workers. In cases of intense or long-term exposure, it may lead to often fatal diseases such as silicosis and lung cancer.

Although the most common form of sandblasting is manual blasting, sandblasting can also be performed mechanically in blasting cabinets where the process is supposed to be more controlled. However this new report shows how little mechanical sandblasting as done in Bangladesh actually helps protect workers from exposure to silica.

Sandblasting and silicosis

Whilst sandblasting to achieve a worn-look on denim is a relatively new phenomenon within the clothing industry, similar methods have been widely used within the mining and building industries for many decades and the link between the use of sandblasting and the risk of silicosis has long been acknowledged.[1] It was the high health risks associated with the manual sandblasting process that prompted regulation of the technique in the EU in the 1960s.

Hazardous work

Sandblasting can expose workers to extreme health hazards and can cause death within months or years of starting work as a sandblaster. Sandblasting using natural sand is especially problematic as workers inhale crystalline silica dust particles during production, causing serious damage to the respiratory passages. These particles are so tiny that they are invisible to the naked eye. The body is unable to expel the silica particles causing diseases such as silicosis. The particles penetrate the pulmonary alveoli and the connective tissue, gradually impairing lung capacity and the workers' ability to oxygenate blood. Symptoms include shortness of breath; as the disease develops, this is common even when resting. This puts additional strain on the heart eventually leading to death. However, the progress of silicosis can be slowed if symptoms are diagnosed at an early stage.

What is silicosis?

Silicosis, one of the oldest occupational diseases, still kills thousands of people every year, everywhere in the world. It is an incurable lung disease caused by inhalation of dust containing free crystalline silica. It is irreversible and, moreover, the disease progresses even when exposure stops. Extremely high exposures are associated with much shorter latency and more rapid disease progression. A frequent cause of death in people with silicosis is pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and emphysema, as well as heart failure, are other causes of death.

Acute silicosis develops a few weeks to 5 years after exposure to high concentrations of silica dust.

The risk of developing silicosis is dependent on the lung dust burden and dependent further on the intensity, nature and duration of exposure to silica dust. Four main types of silicosis have been classified: chronic simple silicosis, accelerated silicosis, complicated silicosis and acute silicosis.

Chronic simple silicosis is the commonest form of silicosis and results from long-term exposure, usually appearing 10-30 years after exposure. Slowly developing progressive shortness of breath is the main symptom of chronic silicosis. Other symptoms and signs include persistent cough, tachypnoea, fatigue, weight loss, chest pain and fever. Accelerated silicosis develops 5-10 years after exposure, progresses rapidly and gives a higher risk for complications. Complicated silicosis is assoicated with acute silicosis and more severe symptoms and related illnesses. Acute silicosis (also called silicoproteinosis) develops a few weeks to 5 years after exposure to high concentrations of silica dust. Rapid onset of severe dyspnoea, cough and ground-glass chest x-ray appearance are the features of acute silicosis which may lead rapidly to death.

In addition silicosis has been linked with the accompanying development of other diseases, including tuberculosis, cancer, or autoimmune disease.

Diagnosis of silicosis depends on history of exposure to sufficient silica dust, chest x-ray findings consistent with silicosis and exclusion of other illnesses causing similar abnormalities. In many instances silicosis can present similar symptoms to tuberculosis and workers can be mis-diagnosed with tuberculosis or chest infections. Moreover, increased frequency of tuberculosis in silicosis patients complicates the situation further. In Turkey several sandblasting garment workers were first diagnosed with tuberculosis before more thorough medical investigations uncovered the truth. In addition, in its early stages silicosis can be hard to diagnose and pulmonary function tests may be normal early in the course of simple silicosis. However, with disease progression, a restrictive and/or obstructive pattern may emerge.[2]

There is no cure for silicosis. The prognosis for patients with chronic silicosis is can be quite good but acute silicosis, however, can progress rapidly to respiratory failure and death.

Treatment of silicosis is far less effective than prevention and is mainly limited to antibiotics, bronchodilators, cough suppressants, anti-tuberculosis drugs, oxygen and physiotherapy. However, treatment also requires that continued exposure to silica dust be stopped immediately. A worker has to therefore go through the hurdle of obtaining a proper diagnosis first and then must be relieved of work despite being outwardly “fit for work” and given adequate medical treatment to alleviate symptoms and help slow down progression.

These three steps also depend heavily on access to medical facilities and the financial ability to both pay for

Sandblasting

an overview

Sandblasting removes the dark indigo pigmentation from a garment, usually made of denim, giving it a popular pre-worn look. The process involves smoothing, shaping and cleaning a hard surface by forcing abrasive particles across that surface at high speeds using special types of sands. These are sprayed onto the selected parts of the garments at high pressures through air compressors to remove colour from those areas to create the desired design.

Sandblasting can be done manually or mechanically. The mechanical process encloses the sand and dust particles in blasting cabinets and is – if used correctly – therefore less hazardous for the operating workers. However, manual sandblasting is preferred by factories as it is cheaper, since it does not require investment in advanced and expensive industrial equipment. Sandblasting also costs less than other fading methods (like hand-sanding) which are more labour intensive.

medical treatment and continue to support the worker and his or her family. By definition therefore some form of compensation and sick pay is needed. This is almost totally lacking in Bangladesh.

Sandblasting and Cancer

Some countries, for example Netherlands and Denmark, have also classified silica as a carcinogen. In 1987, the International Agency for Research on Cancer (IARC), an agency of the World Health Organization, concluded that crystalline silica (but not non-crystalline, or amorphous, silica) was a 2A substance (a probable carcinogen for humans). However in October 1996, an IARC panel concluded that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources should be classified as carcinogenic to humans (Group 1).[3]

The classification change was based on "a relatively large number of epidemiological studies that together provided sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica under the conditions specified." The panel found many cases of elevated lung cancer risk not explained by confounding factors. This means in practice that suppliers of silica – at least in the US – must analyze the crystalline silica content at the 0.1% level and determine if the silica is crystalline or non-crystalline; whether it is a regulated form of crystalline silica; or whether it is a mixture of several silica types.

Regulations on Sandblasting

Sandblasting itself is not prohibited in most countries, and restrictions are instead placed on the type of sand used. On the practice of sandblasting itself, the US Department of Labor, Occupational Safety & Health Administration states that "the most severe worker exposures to crystalline silica results from sandblasting." The use of crystalline silica was banned for most blast-cleaning operations in Great Britain in 1950 (Factories Act of 1949) and in other European countries in 1966. In 1974, the US National Institute for Occupational Safety and Health (NIOSH) recommended that silica sand be prohibited for use as an abrasive blasting material and that "less hazardous materials be substituted for silica during abrasive blasting."[4]

Under EU directives and national legislation, sandblasting is allowed provided that the abrasive materials contain less than 1% silica; in the US the figure is less than 0.5% silica. Silica sand used in denim sandblasting can often contain 90-95% crystalline silica.

Sandblasting banned in Turkey

Following the imposition of strict regulations on sand-blasting in many European countries, the clothing industry has largely outsourced production to as yet unregulated regions. Since the turn of the century sandblasting has largely been located in countries with large-scale denim industries such as Turkey, Bangladesh, and China.

It was in Turkey that the negative health effects of this process in the garment industry were recognised, with Turkish doctors being the first to sound the alarm over silicosis amongst garment sandblasters. In 2005 the first major study to link sandblasting jeans with silicosis was published. Further studies confirmed the link.[5] At the time of printing, 52 garment workers are known to have died from silicosis in Turkey, and there have been 1,200 registered cases – although doctors suspect the real number of people affected is much higher.[6]

One astonishing factor is the speed with which the disease takes hold. In coal mining, for example, where silicosis has long been recognised as a common occupational disease, silicosis is chronic and develops after several decades of exposure. However, in Turkey it was found that the massive levels of sand in the air and the force with which the particles were expelled during the blasting process led to acute silicosis. In the garment industry, workers have been known to develop silicosis within months of starting work, not years.

In the garment industry, workers have been known to develop silicosis within months of starting work, not years.

In March 2009, as part of its response to the medical findings, Turkey imposed a ban on the use of sand and silica powder and crystals in the blasting process of denim and other textiles. The ban was introduced following pressure from the Solidarity Committee of Sandblasting Labourers, a committee set up by workers and activists in response to the growing silicosis epidemic among garment workers.

However, since Turkey introduced its ban, low-cost garment production has moved to other countries such as China, Bangladesh, India, Pakistan and parts of North Africa, where labour is cheap, yet where factories are able to produce quality products.

This report shows that a voluntary company ban is simply not enough – governments worldwide should enforce a national ban as well as enforcing import bans.

Killer Jeans campaign

In November 2010, the Clean Clothes Campaign (CCC) launched the Killer Jeans campaign to ban sandblasting in the production of denim garments. The CCC, working together with the Solidarity Committee of Sandblasting Labourers in Turkey, demanded that brands and retailers of denim jeans issue a public ban on the use ofsand-blasting in their supply chains. The International Textile, Garment and Leather Workers Federation (ITLWF) has also been calling for a ban on the practice since 2009.

Almost immediately Levi Strauss and H&M publicly announced that they would phase sandblasting out of their supply chain within months. Over the course of a year many other brands followed in publicly announc-ing a ban. These include Armani, Benetton, Bestseller, Burberry, C&A, Carrera Jeans, Charles Vögele, Esprit, Gucci, New Yorker, Mango, Metro, New Look, Pepe Jeans, Replay, Just Jeans Group, and Versace. Others stated that they would be phasing out sandblasting in their production line while others simply stated that no sandblasting took place in their production lines.

CCC initially only targeted a selected number of major brands but others have since then voluntarily joined in publicly banning the practice. Of the brands targeted, Dolce & Gabbana is the only one which has refused to ban sandblasting or failed to provide information on its sandblasting policies.

CCC also called on the governments of jeans-producing countries to outlaw denim sandblasting, ensure that occupational health and safety rules are enforced, and provide disability pensions to sandblasters who contract silicosis. Consumers in importing countries were asked to contribute by trying where possible to avoid sand-blasted jeans and to avoid brands which had not publicly banned the practice. However it is almost impossible for consumers to assess if a pair of jeans has or has not been sandblasted.

Assessing impact of campaign

Since the Killer Jeans campaign was launched, many brands have announced, officially or otherwise, that they no longer require sandblasting to be done on their denim products. But the problem lies in verifying whether these brands are implementing their bans – or not. It is relatively simple to announce a ban but far harder to monitor the impact of such a ban. No brand has yet agreed to take responsibility for checking for silicosis and treating workers who are found to have silicosis in their supply chain.

As our research shows, in a country such as Bangladesh, where the health and safety laws are still weak and poorly enforced, manual sandblasting is still regularly carried out in denim washing plants. By using home-made air compressors and sand guns with little proper protective equipment, workers in sandblasting units face enormous health risks. In addition there is little or no awareness of the scale of the risks. This lack of awareness plagues not only the workers themselves but also medical specialists who, being unaware that sandblasting is taking place or of the health problems associated with the process, may be misdiagnosing workers as having other diseases, such as tuberculosis.

The research study which forms the backbone of this report looks into the use of sandblasting techniques, in particular manual sandblasting, in the garment industry in Bangladesh. The aim is to see whether and how the ban on sandblasting announced by various brands has been implemented.

The study also reviewed working conditions, occupa-tional health and safety as practised in the factories, access to healthcare and background information about Bangladesh's garment industry. The research uncovered extensive sandblasting – both manual and mechanical - and the arbitrary use of sandblasting for denim products regardless of whether or not the brand in question had banned sandblasting in its supply chain or not.

CCC Belgium South street action in the town of Namur
18/2/2011- sandblasting of jeans - copyrights free

Some workers reported that they are barefoot inside the unit because the factory does not even provide them shoes.

3 Aims, methodology and limitations of study

The aim of the research was to establish information on the use of sand-blasting techniques, in particular manual sandblasting, in the garment industry in Bangladesh. The research endeavoured to gain information about the extent to which the sandblasting ban as announced by many brands has been implemented, and to understand potential obstacles in full implementation of a ban.

Specific aims

- To conduct a study to investigate the prevalence and effects on workers of manual sandblasting techniques used on denim garments produced in Bangladesh and to acquire information on which factories in the country use manual sandblasting techniques and the brands they supply.
- To conduct an in-depth study of production units which carry out sandblasting techniques on denim garments.
- To determine which sandblasting technique is dominant in the denim production units and to find out which and how major production units are continuing with manually sandblasted denim production in smaller, subcontracting factories.
- To ascertain the numbers of workers affected physically by manual sandblasting techniques and what health problems they may suffer as a result, and to ascertain whether any compensation is provided by the production unit authorities to any affected workers.
- To determine which brands sourcing from production units in Bangladesh have officially, or otherwise, announced bans on the use of sandblasting techniques; and to determine the extent to which brands' bans on sandblasting techniques are implemented by the production units supplying those brands and what measures, if any, brands had taken to assess the implementation of their announced ban.

Scope

The study involved an in-depth investigation of seven factories which use manual and mechanical sandblasting techniques on denim garments and interviews with 73 workers at these factories. The background research was conducted by a team of researchers with a further team who carried out field work over a period of eight weeks, including conducting worker interviews in specific production sites. Workers from a further two factories were also interviewed giving a total of nine factories.

Methodology

The survey was conducted by Alternative Movement for Resources and Freedom (AMRF) Society. First-hand information was collected from the following sources:

- factory workers
- factory management
- experts in the sandblasting field, i.e. doctors (National Institute of Diseases of the Chest and Hospital and Bangladesh Institute of Health and Safety), trade unions members and leaders, patients affected by sandblasting and academic experts

The main source for first-hand information were questionnaires answered by the factory workers. A total number of

73 workers from seven factories were interviewed using a standard questionnaire. The workers were selected (as far was possible) on the basis of sex, age and type of job so as to represent the workforce in the factory. Forty-eight of the workers were either current or former sandblasters. As it is difficult for the workers to answer the questions during their work time, the interviews were mainly done in the evenings after they had finished work.

Logos from the following brands/sub-brands/companies were shown to the workers interviewed: Armani, Benetton, C&A, Carrefour, Diesel, Dolce & Gabbana, Esprit, H&M, Inditex (Zara, Massimo Dutti), Levi's, and VF (Lee Jeans and Wrangler).

To get an up-to-date picture of the sandblasting situation in Bangladesh, AMRF also conducted qualitative interviews with industry specialists, journalists and factory managers at two factories. In addition follow-up interviews were carried out with workers from a further two factories to provide some more detailed analysis and insight. These interviews have not been added into the figures mentioned for the quantitative study results but serve to highlight the main issues and provide background and further evidence of existing conditions. The majority of these workers were also sandblasters and bring the total number of factories researched up to nine.

Limitations

This report is the first in-depth study on sandblasting in carried out in Bangladesh. It revealed a real paucity in material on the denim industry in Bangladesh, including a lack of statistical data. Although the garment production factories employ a massive workforce, relatively few workers are employed in sandblasting units. It was considerably difficult to gain access to factories. Excessive scrutiny of the garment sector meant there were significant problems in accessing records from garment associations or medical institutions: even when medical records could be accessed, they were generally not properly documented.

Workers' illiteracy and their fear of disclosing information made it difficult for the researchers to gather the required data, particularly when it came to identifying brands. Many of the workers were unaware of the brands they were working for and the factories' websites contained limited information on the brands or companies they supply.

The interviewers tried to ascertain which brands the factories were working for by asking the workers to identify the brands or major companies from denim logos. Two problems arose here. First, each company, brand or brand-holder may have different brands and logos. A combination of time constraints and a desire not to confuse meant it was impossible to show all of these to the workers being interviewed. To get around this problem, the research team showed the workers the main brands only. Second, it was difficult for the workers to identify the brands from logos alone. Due to their low levels of literacy, some workers were unable to read the brand names and were only able to identify designs. In some cases the brand logos were not stitched onto the garments until after the sandblasting treatment had taken place so as to avoid damaging the garments. This allows the factories – either by coincidence or intentionally – to conceal the identities of brands for which they continue to use sandblasting.

Anonymity

In order to protect the identity of these workers, their details are withheld. Workers who have participated in similar research into working conditions and human rights abuses in the Bangladesh garment sector have been targeted for retribution by both factory management and the authorities; many are harassed, dismissed and sometimes beaten.

The names and locations of the factories investigated have also been withheld both to ensure the safety of workers but also to avoid any possible cut-and-run action by the brands.

In order to protect the identity of these workers, their details are withheld. Workers who have participated in similar research into working conditions and human rights abuses in Bangladesh have been harassed, dismissed and sometimes beaten.

“Like a desert during a sandstorm”[7]

4 On the workshop floor: findings from the study

The research reveals a snapshot of working conditions in sand-blasting units that we believe holds true for many such factories across Bangladesh; we are asking for an industry-wide shift in working practices and not only re-mediation efforts targeted at selected factories.

About the factories

All nine factories included in the report were larger facilities in Bangladesh's garment sector rather than small workshops or illegal factories where we believe manual sandblasting is used even more extensively. The sand-blasting units investigated were mainly either inside the main factories or located in separated washing plants owned by large manufacturing groups.

Brands recognised

Almost 50 percent of the interviewees (35) were able to able to recognise the logos of brands show to them as being manufactured in the factories in which they worked. The following major brands were specifically mentioned by the workers as ones that their factories supply: H&M, Levi's, C&A, D&G, Esprit, Lee, Zara and Diesel.[8]

Buyers'/auditors' visits

More than three-quarters of the workers interviewed said that buyers or audit companies had visited the factory within in the last year. However, in more than three-quarters of cases, workers said that management "prepares" them before these visits. Almost 90% of the workers interviewed said that changes are made in the factories before a buyer's visit. In the vast majority of cases, the auditors and buyers did not talk to the workers. None of the workers reported specific audits focusing on sand-blasting.

Codes of conduct and freedom of association

Of the 73 interviewees, only a small minority knew what a code of conduct is for. Around half the workers (42) said that some form of a code of conduct is posted in their factories, with the code's instructions being explained to workers in less than three quarters of cases.

Only a small proportion of the workers interviewed said that a trade union operates in their workplace; 19 workers were members of a trade union. Almost half said there have been strikes or demonstrations in the last five

A single worker can produce between 20 and 30 pieces per hour hand-sanding while with manual sandblasting he could make between 35 and 60 pieces.

years. Meanwhile 17 interviewees said that their factories had employed legal or extra- legal forces to control the workers.

While 34 of the 73 workers said they had employment letters or contracts, only 13 of them were given a copy.

Use of Sandblasting in surveyed factories

Over one in three of the workers interviewed via the standardized questionnaire said that either manual or both manual and mechanical sandblasting are performed in the factory they work in.

The majority (49) of workers did not know if their factories needed or have a permit for sandblasting, with only 16 saying that their factory did have a special permit. When it came to an understanding of the regulations governing sandblasting, the vast majority of workers did not know if sandblasting is particularly regulated.

Over two-thirds (49) of interviewees said that the sandblasting is done in a building separated from the main factory and other production processes.

Type of processes used

Several workers interviewed described the sandblasting units as one big room containing between five and eight machines. Both manual and increasingly, mechanical sandblasting takes place here.

A manual sandblasting machine can be operated by only one person but to increase the speed and productivity two (an operator and a helper) or even three people are assigned to each machine. Although the rooms are equipped with large pipes that suck the dust laden air out of the room through big motors, a significant amount of dust always remains in the air.

In comparison, four workers (two operators and two helpers) are assigned to mechanical sandblasting machines. Some workers reported an operator and a helper working the machine for an hour while another team of two workers perform minimal jobs in the unit (sorting goods, cleaning, etc). After one hour they alternate tasks and the second pair starts work on the machine. Other workers said that sometimes three people operate the machine at one time while the other people do the small jobs like shifting the garments to other places.

Machines operated

Several workers interviewed reported that their sandblasting units are active 24 hours per day and that they work in two shifts. The workers who were specifically questioned about the machines they use stated that they work with imported machines. One manager of a larger washing plant stated that his unit only uses imported machines while others stated that smaller factories mainly use locally produced machines in the mechanical sandblasting process. These local machines are far cheaper than imported ones and are excessively loud. Despite this, workers using imported machines also complained

Mechanical sandblasting

No solution to the silica dust problem

Interviewees told us that mechanical sandblasting is only done in semi-closed blasting cabinets; fully closed cabinets were not mentioned in any of the interviews. The machines separate the worker from the dust and sand particles by a glass shield so that he is not directly hit by the dust-laden air. However, the cabinets have a gap at the side through which the garments are pushed in and out through which sand and dust are released. A helper stands beside the machine and inserts a wooden board into the jeans and passes this to the operator at the machine. This operator then pushes the denim into the machine, sandblasts it and passes it to another helper who transfers it to a table. It is this last helper who suffers the most since he is closest to the sand particles.

The workers describe the sandblasting machines as having an exhaust fan at the back that takes hot sand-filled air away from the machine but not from the room. In many cases the workers mentioned that these fans either do not work or are insufficient to carry the dust out of the room. Because of this the air in the sandblasting rooms is always dusty affecting all workers in the room.

about noise levels. One of the workers interviewed in a case study, aged 36, is already dependant on a hearing aid due to the noisy work environment.

Manual versus mechanical methods

Manual sandblasting used to be the predominant fading method used in Bangladesh, as in Turkey; however as mentioned above, the use of other methods like mechanical sandblasting, hand-sanding and laser radiation fading is increasing.

All the factories in which informal interviews were conducted which are doing manual sandblasting are also doing mechanical sandblasting. In most cases they are doing more of the mechanical than the manual process.

The fact that the sandblasting units investigated were mainly either inside the main factories or located in separated washing plants and that all the factories investigated were medium to large facilities, means that in smaller factories and subcontracting factories, it is quite possible that manual sandblasting is still the predominant fading method. One journalist who was interviewed who has seen a good number of small and subcontracting factories did not even mention the mechanical process and it seems likely that there manual sandblasting is mainly used in these smaller units.

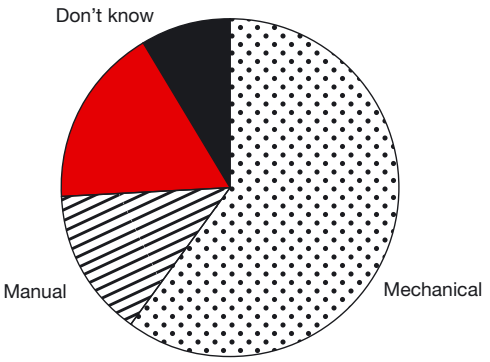
Alternative fading methods

In order to maintain a "sandblasted" look buyers' are asking suppliers to shift from sandblasting to other methods including hand-sanding, laser fading and the use of Potassium Permanganate Spray, but these alternative techniques carry their own problems.

PP Spray is sprayed onto denim garments and then washed off leaving the treated area lighter than the surrounding fabric. Workers, mainly female, spray the chemical onto the denim using a hose. This process is relatively common in Bangladesh and leaves workers exposed to harmful inhalation of the chemical.

Laser fading creates a more artificial design than the very natural and smooth sandblasting. Plus, although laser fading is certainly safer, the cost of the process makes it impossible for most suppliers to provide this technique. The radiation fading machines need to be imported from China and cost US$60,000, meaning only the biggest Bangladesh factories could afford them. As of now there are only around 20 of these machines in Bangladesh. According to one interviewee, the machines are situated in 20 factories of which 10 have totally stopped sandblasting while the other 10 do both laser fading as well as manual sandblasting. The other 30 big denim factories reportedly fade their denim products by sandblasting and hand-sanding. A second interviewee reported that

Sandblasting method used in factory



all of the major factories he had visited all were still using sandblasting.

Hand-sanding is less harmful than sandblasting and can create similar results to manual sandblasting but it is more labour intensive and therefore slower, making it a less economically viable alternative. According to workers interviewed, a single worker can produce between 20 and 30 pieces per hour hand-sanding while with manual sandblasting he could make between 35 and 60 pieces (depending on design and the type of fabric). In some cases, workers hand-sanding reportedly get higher wages than sandblasters due to the more labour-intensive nature of their work.

Impact of brands' ban on sandblasting

A washing plant manager who was interviewed for the report claimed that since Turkey had implemented its ban on sandblasting, the pressure on brands to stop using manual sandblasting has increased.

In-depth interviews suggested that in general some factories are slowly shifting from manual sandblasting to other fading methods such as laser fading. This shifting process started towards the end of 2010 when some buyers started insisting that factories fade the denim used in the garments by means other than manual sandblasting. This coincided with the decision of major brands to issue a ban on the process.

Four of the sandblasting units covered in the report closed either permanently or temporarily in late 2011. None of the workers knew why. Four others remained open as usual while a further one surveyed was closed temporarily for refurbishment.

Several workers said that the factories supplying foreign brands have to comply with the rules against manual sandblasting, and that some do comply. However these

The government duty and corporate responsibility to carry out adequate human rights due diligence in order to minimise, avoid and where necessary re-mediate against human rights abuses seems almost completely absent.

workers worked at those factories (4 out of 9) which had shut down or were in the process of shutting down their manual sandblasting units. It was reported that some factories have found certain buyers to be strict on their "no-sandblasting" requirement. It is still not clear which brands these may be.

During the qualitative interviews the workers questioned – all of whom work in the main washing plants of big factories – stated that their sandblasting units are still open and that they still do sandblasting, although some workers reported that sandblasting is not done to the extent that it used to be.

However, the quantative survey contradicts this view. Nearly two-thirds (47) of the workers surveyed said that there have not been any changes in the sandblasting units in the factories in which they work. Other changes that were noticed by the workers included:

- the workplace had got dustier
- sandblasting machines had been replaced
- more masks and gloves were provided

Some interviewees also suggested that there was an increasing switch from using local sand to imported sand from China after buyers pressurised factories to stop using local sand. The black local sand causes black dust which spread around the room, making it too dark to work in. The majority (41) of workers who answered the questionnaire stated that the local cheaper sand was still used; they were able to distinguish it by its dark colour.

Why the brand ban is not enough to end sandblasting

The research revealed that while four of the nine factories have closed their sandblasting units (either partially or fully), the majority were continuing to undertake both manual and mechanical sandblasting, exposing the workers to massive amounts of sand dust.

The research shows that the use of sandblasting as a cheap and quick method of producing a much in-demand and high value product will require more than good intentions to have as wide an impact as is needed if workers are to be protected from further harm. Information gathered from interviews with workers and experts highlighted a number of barriers for the elimination of sandblasting

How to test for sandblasting

Metal detectors can show if sandblasting has been done on denim. Two types of sand are used for sandblasting: small-grained silica rich local sand with a smaller proportion of metal; and larger-grain alumina sand (often imported from China) with a higher percentage of metal and lower silica level. Metal detectors can detect sandblasting done with the metal-rich imported sand but not that done with cheaper local sand. Local sand therefore has the dual advantage of being cheaper and less easy to detect. Although its use carries a higher health risk due to the large proportion of silica dust, local sand is therefore often prefered. Some experts also claim that the sand used in sandblasting can be observed under a microscope as it is almost impossible to completely wash out. However confirming sandblasting remains extremly difficult.

Turning a blind eye

There is little information available as to what extent brands that have publicly announced a ban are really checking that their suppliers have switched from using sandblasting to other techniques.

According to one of local writers interviewed, buyers are aware that sandblasting bans are relatively new and they know that it will take some time for the manufacturers in Bangladesh to shift completely from manual sandblasting to other washing methods. For this reason, he believes that buyers accept that factories are temporarily continuing to use sandblasting to meet their targets. Other interviewees also agreed that factories are still in the process of shifting their production techniques, are not yet ready to use laser fading in their orders and therefore still use sandblasting to meet their targets.

Even if brands claim they do insist on sandblast-free production, in the current situation, in which sandblasting units – both manual and mechanical – attached to factories are still running, it is difficult for the brands which have implemented bans to control them.

Experts, workers and factory owners all said that the design and order time-line for denim products had not changed, which required the use of manual sandblasting for design, speed and cheapness (see below). This left suppliers with the unsolved problem of producing in the same amount of time, a product which looks sandblasted and should cost as little as a manual sandblasted product but which is not manually sandblasted. According to the washing plant manager interviewed, although it is possible for technical experts to detect whether a denim garment has been sandblasted or not, he felt that many buyers and inspectors chose not to do so in order to continue their relationship with their supplier and maintain the same design and production specifications.

The research further found that monitoring and audits of the factories surveyed were woefully inadequate in properly assessing working conditions and any alleged "ban" on sandblasting. One journalist interviewed alleged that despite the ban on sandblasting in reality brands turn a blind eye to its continued use in Bangladesh.

The government duty and corporate responsibility to carry out adequate human rights due diligence in order to minimise, avoid and where necessary re-mediate against human rights abuses seems almost completely absent. Corporate due diligence should, according to John Ruggie, the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises, include a "periodic assessment of actual and potential human rights impacts of company activities and relationships; integrating these commitments and assessments into internal control and oversight systems; and tracking and reporting performance". This responsibility is "not a one-time transactional activity, but is ongoing and dynamic."[9]

Design faults

One of the biggest barriers to the elimination of sandblasting is the failure of the brands ordering denim products to change their designs. One local commentator, who works with the local textile industry associations, put the responsibility for this onto consumers, who he said were asking for sandblasted-style designs while major buyers were in fact already switching to different designs, despite the obvious fact that it is in fact brands which place the orders and help set the trends.

This poses a major problem for the supplier factories, since many of the designs cannot be achieved without the use of sandblasting. For example some particular kind of fabric finishes can only be achieved through sandblasting and not through any of the alternative fading methods, adding to the difficulties suppliers face in providing alternative finishing techniques.

Due to fierce national and international competition, factories do not raise their concerns about the unchanged designs because they fear losing orders. As a result, buyers can continue to order these designs – and according to the washing plant manager they still do – without worrying about the inability of the supplier to meet the specifications.

"The best way to help ensure no worker – in any garment factory – faces the risks associated with exposure to crystalline silica is to move to end sandblasting industry-wide." [10]

Sandblasting in the dark

One washing plant manager interviewed stated that while brands may instruct factories not to use sandblasting on their garments, the factories do not always adhere to these instructions. Although they are afraid of losing orders because of non-compliance with buyers' bans, they take this risk since there are few controls in place over their operations, because the design and timelines are easier to achieve using sandblasting and because of the higher costs of other fading methods. In these cases sandblasting is mostly done at night because there is less risk of a buyer's visit after dark.

In several factories workers claimed that manual sandblasting took place, often in the night, in order to finish orders for all brands regardless of whether the brand had asked the supplier not to use manual sandblasting. One factory manager interviewed first claimed that the factory only uses the mechanical process but later admitted that they shift to the manual technique if they can otherwise not complete the order in time. Workers also reported that when they cannot fulfil their targets using mechanical sandblasting, management advise them to blast the garments manually, even when the workers know that the buyers have specifically forbidden manual sandblasting.

This means that even when brands have requested the use of other methods to be used to produce their goods, sandblasting is still used to speed up production and meet their deadline. Brands meanwhile have not revised deadlines, pricing and target production figures to fit in with a non sandblasted means of production, increasing the likelihood of ban breaking.

In several factories workers claimed that manual sandblasting took place, often in the night, in order to finish orders for all brands regardless of whether the brand had asked the supplier not to use manual sandblasting.

A universal ban?

According to our research and interviews, denim produced for the local market is still mainly faded through manual sandblasting, because the restrictions are a lot lower than for exported garments. This means that, even if a voluntary ban was implemented properly by the main multi-national brands, it would require a greater commitment from the industry in Bangladesh and the government to truly eliminate sandblasting from the Banlgadesh garment industry.

Factories' risk assessment in outsourcing sandblasting

Since certain brands have banned sandblasting, there is a risk that factories which continue to practise this fading technique are caught out during buyers' and/or auditors' visits. However while outsourcing to a completely different washing plant means there is less risk of discovery, sandblasting within the factory's own washing sector means the company profits from the process – a major reason why factories still do sandblasting themselves. An added reason could be that it is cheaper to carry out the sandblasting in an already existing sandblasting unit rather than set up an entirely new sandblasting unit elsewhere.

Some factories establish washing plants under different names to hide the owner's identity. Sandblasting is then carried out in these separate facilities, allowing the owner to continue the process without the risk of exposure.

“When I wake, my eyes are heavy and filled with sand”

5 Health and safety in the factories: In the eye of the storm

"...it is scientific and medical fact that the proper and appropriate use of sand (silica or quartz powder) or crystalline in blasting process for denim apparel and fabric does not cause any harmful effects for the human health, therefore if all necessary precautions are taken effectively and efficiently sandblasting is not hazardous for denim workers"

(Response of Istanbul Textile and Apparel Exporter Associations (ITKIB) to Eurotex questions on the ban of sandblasting of denim jeans in Turkey[11])

Provision of safety equipment

Good safety equipment is an important factor in safeguarding workers' health and safety. In sandblasting it can be the difference between life and death. Indeed the Istanbul Textile and Apparel Exporter Associations have claimed that sandblasting is safe as long as the proper equipment is used. Some brands have also stated that if they were to use or if they had used or if they are using sandblasting then the strictest health and safety procedures were followed.

However our research shows that in all factories surveyed even the most basic health and safety procedures were not followed and even if they had been they would not have been enough to protect the workers from exposure. This clear failure to ensure high standards of safety means that workers employed to carry out mechanical sandblasting (including both operators and support workers) are being exposed to the same dangerous levels of silica as those employed in manual sandblasting. For this reason we now believe that both processes should be banned from denim supply chains.

As early as 1992, the National Institute for Occupational Safety and Health (NIOSH) in the United States issued the following alert[12]: "Warning! Abrasive blasting with sands containing crystalline silica can cause serious or fatal respiratory disease." The alert documented 99 cases of silicosis from exposure to crystalline silica during sandblasting. Of the 99 workers reported, 14 had already died from the disease, and the remaining 85 may die eventually from silicosis or its complications. NIOSH requested that "editors of trade journals, safety and health officials, labour unions, and employers bring the recommendations in this alert to the attention of all workers who are at risk." The alert recommended in particular an end to the use of sand containing over 1% silica.

Despite this very stark message and the increasing concern in other industries over the use of sandblasting (and in particular sandblasting using silica) many brands simply appeared to shift production from Turkey to other countries. According to material found online, only Levi's, one of the first companies to ban sandblasting, has issued a publicly available lengthy health and safety manual check-list for its suppliers which includes the following guidelines:

Safety Guidelines (when crystalline silica (SiO_2) is present in abrasive material)

Environment, Health and Safety Handbook - Levi Strauss & Co

- Abrasive contains less than 1% crystalline silica. Crystalline silica may be found in quartz, cristobalite or tridymite.
- Industrial hygiene assessment should be conducted to ensure worker exposure to airborne silica is below regulatory standards and acceptable levels.
- Full-body, hooded coverall and boot/shoe covers are worn to prevent dust from getting on clothes.

- Good personal hygiene is practised to avoid unnecessary exposure to silica dust.
- An air purifying, full-face respirator with high-efficiency filter operated in positive pressure mode is used.[13]

Safety equipment inadequate or not used

The vast majority of those interviewed by questionnaire (58 workers) said their workplace was very dusty despite there being some form of ventilation fans in most workplaces. In fact, over half of the workers interviewed (38) had already complained to management about workplace conditions: the main issues were dust, lack of masks and fans.

Most of the workers who completed the questionnaire (64) used some sort of mask while working, but the vast majority of workers (51) had to provide those masks themselves. The masks (usually N95 respirator masks) some workers get for their work are not sufficient for the amount of dust that is in the room and get worn out pretty fast due to the high concentration of particles in the air. Worn out masks are not replaced in time and workers are told to continue using the old masks. This forces them to inhale the dust through the worn out mask or they have to remove it since they cannot properly breathe through these masks. Some remove the old masks completely as wearing them makes breathing more difficult. The workers who are not provided any masks at all cover their faces with several layers of cloth.

Altogether 55 workers stated that they were able to access other safety equipment such as gloves and sometimes mechanical sandblasting cabinets. While some factories provide goggles, gloves, gumboots and ordinary masks others are not providing any safety equipment at all. Some workers reported that they are barefoot inside the unit because the factory does not even provide them shoes. If safety equipment is available workers do not always use it due to the high temperatures inside the sandblasting unit. These are due to the hot and humid conditions and made worse by the heat generated by running the sandblasting machines.

This contrasts with the recommendation that sandblasting be undertaken by workers using a air-purifying respirator with a high-efficiency particulate filter and in high concentrations a supplied-air respirator equipped with a full face piece and operated in a pressure-demand or other positive-pressure mode.

The workers also stated that management does not make them use safety equipment unless a buyer is expected to visit. Workers stated that in some cases equipment like masks and oxygen tanks is kept in the manager's office and is only given out to the workers before a buyer's visit.

One factory manager interviewed stated that his factory provides oxygen masks with tanks so that workers can protect themselves from the dust particles; however, he said that workers do not use this equipment because it is too heavy to carry for the long working hours.

Another respondent said that in fact most factories have just one or two proper respirator filter masks to show buyers and auditors while workers mainly protect themselves with normal clothes. Given the heat and the lack of information about the hazards of sandblasting,

Brands should immediately stop the use of sandblasting throughout their supply chains.

Abul Y, 28 years old

machine operator

Abul has been doing sandblasting for eight years and has been suffering from breathing difficulties for the last four to five years. He explained how his health began to deteriorate only after he began working in the sandblasting unit. He was taken to the local clinic in January 2012 and given a chest x-ray and a spirometer test by a lung specialist. The x-ray appeared to be normal, but the results of the spirometry exposed that he had possible moderate restriction. He was then prescribed medication for his breathing difficulties. The doctor said that he may be suffering from allergic reactions to the dust in the workplace, but it was too early to say if his condition would progress towards a disease such as silicosis.

Mohammad X, 25 years old

machine operator

Mohammad X has been working in his factory as a sandblaster for nearly two years. When he first joined as a helper he did not have any health problems. The conditions in the sandblasting unit were good at first: the machines worked well and there was not too much sand. But conditions in the unit are now deplorable: the machines no longer work properly and there is always dust in the room, so it feels as though there is always a "thick fog" in the factory.

He started having trouble breathing and feeling constantly tired a year ago. He went to see the factory doctor, suspecting that he may have heart problems. The factory doctor gave him a prescription for medication and told him to take that prescription to a local general hospital. There the doctor who treated him took four tests: an ultra-sound, a blood test, an x-ray, and breathing tests. He was not provided any compensation from the factory and he had to pay the total cost of Tk.1600 for his treatment himself. He is paid only Tk.3400 a month and was forced to take out a loan to pay the doctor's fees.

After carrying out the tests, the doctor told him that his condition was not serious and that he would get better with medication. However, more details were not provided despite asking. He took the prescribed medication, completing each course, and remained well for the next two to three months. However, his health problems returned and he currently experiences breathing difficulties and chest pain. Despite using two cloth masks during work, he still coughs out black sand-laden sputum. He described how it seems as if he coughs out entire "balls of sand" and how the masks provide only little protection against the dust in the sandblasting unit. Even if the workers use them all the time, these masks, he claimed, cannot stop the sand from entering their noses and mouths.

it is not surprising to see most workers choosing not to wear surgical masks they have to provide themselves and instead using simple cloths.

Understanding the health hazards of sandblasting

56 of the workers interviewed knew that sandblasting can cause respiratory problems. In addition, 35 of the interviewees knew one or more workers who had fallen ill from sandblasting, with one interviewee knowing 11 people who had fallen ill from this type of work. While most workers who completed the questionnaire were aware that doing their work might result in health problems, less than half of them had been told about this by management.

Two thirds of those interviewed (56) said they had breathing problems. 22 workers suffered from other kinds of ongoing health problems, including:

- chest pain
- coughing
- tuberculosis
- hearing problems

Availability and pay for sick leave varied, even within factories, with most workers being able to take leave but without pay.

Additionally, the majority of workers interviewed in the qualitative interviews had also experienced health problems due to sandblasting. One of the workers mentioned that since he had started working in the sandblasting unit he had experienced violent coughing fits whenever he is in a dusty environment. Another worker said: "When I wake, my eyes are heavy and filled with sand".

Factory management: Blame it on the workers - "they are ill-educated"

Factory management interviewed stated that it counsels its permanent workers on the health hazards of sandblasting, but this information is not given to daily contract workers, As a result, few of the daily labourers use safety equipment. If the workers refuse to use the equipment available, management does not force them to use it.

Rashed X, 24 years old

machine operator

Rashed has been working as a sandblaster for 4 years. He presently feels chest pain and he explained that he feels like there is a constant biting sensation inside his chest. While he was working in the sandblasting unit, he could feel that because of the huge amounts of dust he was inhaling; a lot of mucus had collected in his lungs. He explained: "I used to cough a lot and one day I coughed out blood. That was when I got really concerned about my health." This prompted him to ask his supervisor whether he could be shifted to another unit. He was then relocated to the PP Spray unit. However, there his health continued to deteriorate and he was again shifted to the ironing section, where he is currently situated. Being the sole bread-earner for his family, composed of two sisters, a mother and himself, he cannot afford lengthy and expensive treatments for his health problems.

While some of the workers are aware that sandblasting could harm their health, they do not fully comprehend the possible outcomes of their employment. The factory manager interviewed puts this down to the workers' poor education and the fact they see no direct visible consequences of their employment. According to him, workers consider the health hazards of sandblasting similar to those associated with smoking, since both the effects of sandblasting and smoking only surface after long periods of time. Since they do not suffer from immediate severe health problems, the workers often underestimate the dangers of the process.

Long-term health issues

Some of the workers said that they either feel sick or have fallen sick several times due to their work as sandblasters and many of the workers interviewed know people who have become ill from working in the sandblasting unit; these workers have left the job because of their health problems. One journalist interviewed has also claimed that, as in Turkey, workers who cannot continue to work due to serious illness go back to their villages because without a job they have no income and life in the village is a lot cheaper than life in the city. He is convinced that workers who have fallen sick from sandblasting and gone back to their villages have already died there due to their work-related illness without any public attention being drawn to their predicament.

The workers interviewed are aware of other sick workers who occasionally have continued working at the cost of their health. Some mentioned a man in their unit who has worked there for 10 years and has now difficulties in speaking and breathing. Another worker reported a man in his unit who, due to the work he has done, can no longer speak. One of the oldest interviewed workers mentioned that due to the health effects most workers are unable to remain in the sandblasting unit for a long time. He knows very few workers who have been employed in the unit for more than seven or eight years. It was observed during the interviews that most of the workers interviewed suffered from coughing.

Researchers were told that factory owners are aware that manual sandblasting dramatically reduces the life span and working capacity of sandblasting workers.

Time runs out for workers

Workers know that they cannot work in sandblasting for a long time because of the effects of sandblasting on health and the fact that few workers have ever kept working as sandblasters for longer than a few years because of ill health. Sandblasting reportedly pays better than other garment work, so workers try to do sandblasting for as long as possible so they can make as much money as possible before moving on. The factories have to pay higher salaries for a hard job like sandblasting, because if they offered lower wages fewer workers would want

to take the task on. Most of the least well paid work like stitching is done by women, unlike sandblasting where the majority are male workers. One journalist in particular told researchers that factory owners are aware that manual sandblasting dramatically reduces the life span and working capacity of sandblasting workers. That means that the factory owners know that the productivity of the workers decreases the longer that they do sandblasting.

One journalist interviewed stated that factory owners have recognised that sandblasted is now seen as less desirable by the brands and are therefore not keen to invest big amounts to make improvements in the sector. At the same time they want to make as much money as possible as long as their sandblasting units are still running. For this reason many factories pay their workers on a piece rate basis, which pushes the sandblasters work harder more to earn more money and increase output. This is also a reason why newer machines have not been bought and factories continue to use old style open machines with little or no safeguards.

Long hours, mandatory and unpaid overtime and no rest period

Workers' health does not only depend on the machines and the safety equipment used – it also depends on the amount of time a worker has to work and the circumstances of the job. Almost all workers interviewed using the questionnaire (63) say they are not given any time to rest during working hours. Of the 10 who are given a break, 6 have to rest inside the sandblasting unit.

All the workers interviewed in the qualitative interviews stated that in their two factories they normally work 12 hours each day, from 8am till 8 pm, when overtime is included. In the factories where night shifts are done the second shift then works from 8pm till 8am. These 12 hour-shifts consist of eight regular working hours, a one-hour lunch break and three hours' overtime. However none of the workers in the two factories are allowed to take breaks outside their lunch break.

If a worker does not work overtime, he can leave the factory at 5pm. But this is rare since the workers depend on the money they earn from overtime and in many instances overtime is mandatory.

A factory manager interviewed stated that permanent workers with a fixed salary work eight hours plus overtime while daily wage labourers who are paid on piece rate work up to 14 or even 16 hours to earn more money. However in the quantitative surveys the vast majority of workers surveyed worked 11 -12 hours per day with mandatory overtime. Roughly half were paid for overtime while the other half was not.

Wages for the workers surveyed were higher than many of the other production line workers primarily because they tended to be higher skilled employees and sandblasting was considered more difficult than other tasks such as sewing and cleaning.

Abdul X, 32 years old

operator

Abdul X worked for two years in washing and then transferred to work as a sandblaster. He became very ill after doing sandblasting for two years and suffered from severe breathing problems. Whenever he coughed, he felt chest pains. He went to a doctor but the medication that the doctor prescribed did not cure him. Because of his health problems, he took leave from the factory. He still suffers from chest pain, fever and weakness. He is still working in the same factory but is now doing hand-sanding.

When he realized that he had breathing problems, he visited a local pharmacy where the doctor told him he had a cold and prescribed cold medication. There was no improvement to his health; his breathing problems continued for 10 months. Then he went to another doctor at another pharmacy, who also told him he might have a cold. The doctor told him to get a check up and to have blood and chest tests. But he could not afford the treatment.

Then when the sandblasting unit closed for refurbishment, his condition improved. He had asked management to change his unit because he was getting ill due to sandblasting, but they did not. While working in the sandblasting unit, he used to cough out sand-laden sputum.

Working all day in a “dust storm”

In one factory the operators are allowed to alternate between one hour’s work and one hour’s rest, while the helpers in these factories work continuously for 12 hours a day. In the other, both helpers and operators alternate between one hour on the machine and one hour where they do other small jobs inside the unit. That means that although the workers are not continuously at work on the machine, they still spend the whole day in the dusty environment inside the unit.

A factory manager interviewed stated that separate rooms are available so that workers can escape from the dusty environment during their rest periods in both main and subcontracting factories. This is contradicted by the responses from most workers who said that in fact there were no separate rooms for them to rest in and that they had to stay inside the sandblasting unit the whole day.

The workers who are not allowed to rest do small jobs inside the unit like shifting garments from one place to another when they are not on the machine. These workers reported that there is no such thing as rest for them since they are constantly afraid that the management will catch them not doing their work. One worker reported being threatened by the supervisor if he just looks tired and that workers are not even allowed to lean against the wall during their lunch break in case they fall asleep.

While some workers have their lunch inside the unit, others go to their houses nearby. Workers at one factory said that there is a canteen on the top floor of the factory and they take their lunch there. In the other factory the helper continues working while the operator has his lunch, and vice versa.

Ensuring workers do not take sick leave

Availability and pay for sick leave varied, even within factories, with most workers being able to take leave but without pay. Factories employ various methods to ensure that the workers fulfil their targets. Some workers, for example, reported that they are not allowed to call the factory if they are sick, but that they have to go to the factory and be physically present there. If the management then agrees that the worker is too ill to work, the worker is allowed leave for that day. If the management does not agree that the worker is too ill to work then he has to work or lose his job, even if he is sick.

Another technique for avoiding giving a worker sick leave is to simply give the worker more leave than he wants or needs. If a worker is absent for a couple of days due to sickness, for example, management advises him to take further leave of four to seven days. Since the worker gets no salary for the full period of his absence, this system prevents the workers from taking sick leave. Some workers said that if they cannot fulfil their daily targets, they do not get paid their overtime for that day. Sometimes they are simply marked as being absent on the register and this means that they do not get paid at all for that day.

Doctors and medicines

All of the interviewees in six of the factories who answered the questionnaire confirmed that there were medical facilities such as medication or doctors available at their place of work, as required by Bangladesh law. However in two factories, workers stated that there were no medical facilities at all. In total 46 workers said that their factories have medical facilities like medication and doctors available. However, some workers stated that the medical facilities available were not useful.

During the qualitative interviews, workers from both the factories stated that either a doctor is present or the management gets a doctor to come to the factory if a worker is sick. One worker had visited the factory’s doctor but he said that it was not very helpful since the doctor only prescribed basic medication like pain-killers or gastric medication; this did not help to cure his ailments. Other workers do not go to their factory doctor because he prescribes general medication, which normally does not help them, or he tells them to go to another doctor or to see a specialist, the cost of which is borne by the workers. The workers are aware that they are not given proper treatment and medication but feel that there is nothing they can do to ask the management to provide a better medical service when they fall ill.

The research shows a worryingly low awareness of silicosis among the medical profession and workers.

6 Health hazards and awareness

Occupational health and safety has an appalling record in Bangladesh with scores of deaths from injury in the garment sector each year. CCC has been involved in several initiatives bringing together a co-ordinated response to some of these priority areas such as fire safety. However workers continue to die on the job and continue to fail to gain compensation for injury and ill health.[14]

Poor health and safety at work

Although Bangladesh has extensive legislation regarding occupational health and safety this is routinely ignored and violated with little monitoring and punishment for violators. According to the Bangladesh Occupational Safety, Health, and Environment Foundation:

"Weak enforcement of existing labour law (BLA-2006) at workplaces, poor labour inspections, lack of awareness, sensitization, health and safety training among workers, absence of OSH committee at workplaces level, lack of decent wage and defective industrial relations were some of the key reasons for growing occupational accidents, workers rights violations and labour unrest in the country." [15]

Most Bangladeshi companies have no health insurance, and the majority of workers who become sick simply quit their jobs and return to their home villages – usually in rural areas – with little knowledge of the underlying cause of their sickness. Although there is some provision for medical care for trauma or workplace accidents there is little that is done about longer-term medical conditions.

Despite the provision of several laws and regulations governing ventilation, working hours and conditions, most many washing plants in Bangladesh continue to overlook the need to improve the working environment for the protection and comfort of the workers.

Low awareness of denim sandblasting in the medical profession

The research undertaken shows a worryingly low awareness of silicosis among the medical profession and workers. This parallels the development of the disease in Turkey and suggests that a high mortality explosion is likely to occur in the near future unless the situation is remedied as soon as possible.

Although there is no definite statistics in Bangladesh, it appears from clinical experience that silicosis is not uncommon. A large number of people in Bangladesh are exposed to silica dust in their work places especially in stone-cutting, brick-making, ceramic and other industries. Doctors from The National Institute of Diseases of the Chest & Hospital (NIDCH), a hospital specializing in chest diseases and one of the biggest hospitals in the country, estimated that about 2-3% of present patients are silicosis patients. These patients are mainly stone-crushers, construction workers, pestle-and-mortar makers and people who work with marble, bricks or coal.

However the doctors interviewed and medical facilities encountered during this research had no reported knowledge of silicosis in the garment industry and had not as yet linked the sector with this form of disease. It was clear from our findings and interviews that the doctors were well aware of silicosis but simply not conscious of the possibility of it existing in the garment sector.

Our research showed a general lack of awareness about sandblasting in the garment industry among medical specialists, nurses and doctors in Bangladesh. Silicosis is rarely diagnosed since the doctors maintain there is not much exposure to silica dust in the garment industry.

Our research showed a general lack of awareness about sandblasting in the garment industry among medical specialists, nurses and doctors in Bangladesh. Silicosis is rarely diagnosed in garments workers since the doctors maintain there is not much exposure to silica dust in the garment industry, Most workers who fall ill due to sandblasting are often diagnosed with other diseases such as tuberculosis, asthma, chronic obstructive pulmonary disease and interstitial lung disease, although it is acknowledged that there is a prevalence of other respiratory diseases like tuberculosis in the garment industry.

Three out of the six lung specialists interviewed claimed that they had never heard of manual sandblasting on denim garments. One of the doctors reported that he had gained some information through a recent investigative journalist approaching him who had also interviewed four other NIDCH doctors about the issue of silicosis among jeans sandblasters. According to another article two other doctors had been informed about the connection between silicosis and manual sandblasting. Despite this only one of those doctors mentioned that he had been contacted last year about this issue, while the other (a doctor in the medical teaching staff for occupational and environmental health for around 20 years) claimed that he had never heard about the connection between silicosis and the garment sector.

All the doctors at NICDH, even the ones who clearly knew about the possibility of silicosis in the garments sector, said that in the past nine years they had not yet had a single silicosis patient in this field. After the sandblasting process was explained to the doctors, they were unanimous in saying that such a process, involving such high levels of exposure to silica dust, can definitely cause a disease such as silicosis. This information makes it apparent that most medical practitioners and medical teaching staff in Bangladesh either deny or do not possess knowledge of the correlation between denim sandblasting and silicosis.

Bangladeshi garment industry's poor health and safety record

On Thursday, February 25, 2010, twenty-one workers died when the Garib & Garib Sweater Factory in Gazipur, Bangladesh, caught fire for the second time in six months.Workers could not escape because exits were locked and materials blocked the stairways. The factory's fire-fighting equipment was "virtually useless", according to the Dhaka Fire Service and Civil Defence.

In March, families of the deceased workers received 200.000 Taka (approximately 2085 Euro) in compensation which is far from sufficient. Sadly, this fire was not only preventable, it was predictable, and therefore in no way can we call it an accident. Since 2000, the Clean Clothes Campaign and its Bangladeshi partner organisations have been calling for a review of all Bangladeshi garment factories following similar fatal accidents, all sharing the same hallmarks. A stampede triggered by panic after a boiler explosion at Eurotex on 3 December 2011 brought the number of workers killed in garment factories since 2000 to at least 339. Most of the victims were producing clothes for well-known international brands when they died.

However, to date neither the government, the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) or the international buyers have taken sufficient steps to address the structural and systemic problems in the garment industry.

One of the doctors from NICDH revealed that he had recently treated a patient employed in the garment sector whose symptoms were apparently those of silicosis. However, since it seemed unusual to him that a person working in the garments field could contract silicosis (the word "garments" usually being associated with sewing or knitting workers), he instead diagnosed interstitial lung disease, a disease describing a large group of disorders resulting in progressive lung tissue scarring.

He did not follow up on this patient's progress and did not go for a deeper diagnosis, feeling that a general drug treatment would be more affordable (tests required for further diagnosis would have been more expensive) for the worker and sufficient to cure his ailments. He emphasized how it puzzled him to see all the symptoms of silicosis in a garment worker. When asked why the patient was not diagnosed with silicosis, the doctor said that when patients are asked about their occupational history as a routine procedure in such hospitals, they usually do not give the level of detail required to properly diagnose patients. He recalled that he only knew that the patient worked in the garment sector and did not know if he was doing sandblasting.

Barriers in diagnosing silicosis

The doctors were questioned about the tests normally used to differentiate between silicosis and tuberculosis. They replied that the two diseases each have their unique symptoms. However, the x-ray images for these diseases are very similar and a sputum or blood test can help verify if the patient has tuberculosis. Likewise, a CT-scan can verify if the patient has contracted silicosis rather than tuberculosis. In contrast to the experience of Turkish doctors working with silicosis-affected jeans sandblasters, Bangladeshi doctors explained that a lung biopsy must be carried out in order to confirm that a patient is suffering from silicosis as opposed to any other disease.[16] This is an expensive treatment for sandblasters, and the hospital does not possess the medical equipment needed for lung biopsies at the moment. This quite obviously contradicts the fact that there are several silicosis patients in the hospital.

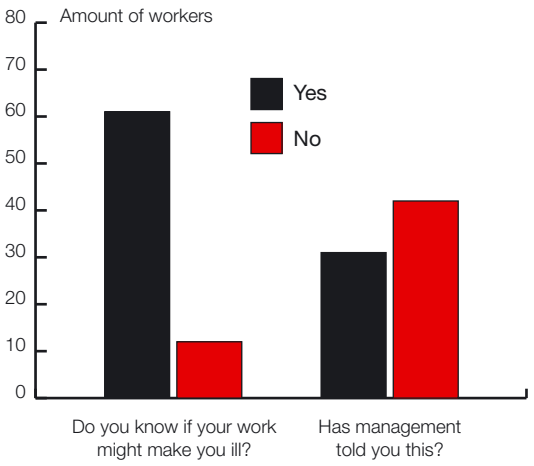
Another doctor at the respiratory unit in NICDH, explained that there are several reasons why silicosis might be diagnosed as tuberculosis in sandblasters. Firstly, silicosis causes lung damage which may make the patient more susceptible to other diseases such as tuberculosis.

Secondly, doctors may refrain from prescribing/suggesting the more expensive tests required for detecting silicosis definitively and be more inclined to offer the much cheaper treatment available for tuberculosis. (Tests for silicosis cost Tk. 10,000 to Tk. 15,000 while those for tuberculosis cost Tk. 3000 to Tk.4000 in government hospitals and Tk. 5000 to Tk. 6000 in private hospitals. When we supported workers seeking medical treatment for breathing problems we found that the diagnosis of silicosis in governmental hospitals is in fact even cheaper. A doctor's examination fee of Tk. 10, a chest x-ray of Tk. 70, a spirometry test of Tk. 200, a blood test of Tk. 50 and a free of cost sputum TB test can be carried out in a government hospital for Tk. 330. In the far more expensive private hospitals, a chest x-ray costs Tk. 300-450, a blood test Tk. 500 and a spirometry test Tk. 700-1300.

Thirdly, when workers fall ill they usually consult doctors in local, less specialized hospitals and pharmacies, since this is much cheaper than getting treated by a specialist at a private hospital. However, this reduces the chances of a proper diagnosis and compromises the quality of treatment. Given the low wages of the workers and the relatively high price of medical tests and treatments this is usually the only option sandblasters have. During our survey of workers, at least four or more people relied on the single wages from 49 of the 73 workers interviewed, meaning they can ill-afford to get expensive treatment.

Our research also highlights the inadequate inquiry and documentation of patients' occupational history by medical institutions. Our researchers accompanied several workers in their attempts to seek diagnosis and treatment for their health problems. During these encounters it was found that doctors do not usually ask the workers about their occupational background during their medical history check, or they do so only briefly. Since this medical history check including name, age, etc. can take under a minute to carry out, it is common for doctors not to know or not to want to know further details about

Awareness of health issues



It was clear from our findings that doctors were well aware of silicosis but simply not conscious of the possibility of it existing in the garment sector.

a patient's occupation and medical history. This was confirmed by other interviewees.

Industry knowledge of sandblasting and worker health.

Two experts on textile engineering, including one university lecturer, interviewed by researchers had some awareness of the health hazards of sandblasting. The lecturer knew "by coincidence" about the health hazards related to manual sandblasting of denim from researching a paper on denim treatments. However both stated that they did not know anyone else among their colleagues in the Bangladesh Textile Engineering University who was aware of the problem. Neither had followed up the issue since their paper was published in January 2010 and that neither of them were very interested in taking action to improve working conditions or spreading awareness on the topic among colleagues and students.

It was later found that both were also involved in the garment business. The issue of ad hoc one-off payments to sick workers was raised but it was stressed that in most cases factories do not pay enough for the proper treatment of occupational health and safety matters and make these payments very rarely for fear of setting precedents. They stated that they believed factory owners are, on the whole, unaware of the dangers of sandblasting

The journalists we interviewed said the opposite; they believe that owners continue to create conditions where workers are exposed to silica dust despite this knowledge, and the journalists reported that factories they had investigated revealed workers with no protective gear at all. One journalist talked about the bad working conditions in subcontracting factories where the employees worked without any protective gear in a horrible atmosphere due to the deafening noise of the locally produced sandblasting machines, saying he felt as if he was "in a desert during a sandstorm".

A conspiracy of silence?

Some of the interviews conducted during the research suggested that the links between private textile businesses, the media and medical care may be one possible explanation for the general lack of awareness about the health hazards of sandblasting in Bangladesh and the lack of articles and documentation about this topic.

Many textile business owners invest in different sectors, not only the garment sector; many large factories are owned by companies which also own local media companies or hospitals. For example the owner of Shanta Group (which has more than 6000 workers in the RMG sector) also owns Apollo Hospital, one of Bangladesh's largest hospitals. One journalist believed that criticism of the garment industry is made difficult unless the reporter works for an international agency or for foreign media.

Less than 1% of Bangladesh's RMG workers are unionised. Workers are reluctant to unionise for fear of losing their jobs.

7 Background to Bangladesh's ready-made garment and denim sector

The ready made garment (RMG) sector in Bangladesh emerged in the private sector in the late 1970s and early 1980s. According to Bangladesh's Garment Manufacturers & Exporters Association (BGMEA) the country has presently 5,150 factories employing 3.6 million workers.

Garment exports crucial to economy

The RMG sector has rapidly become the backbone of Bangladesh's economy. The sector produces about 80% of the country's total exports and in the current fiscal year its exports were worth more than US$17 billion – double the figure six years ago, making the country the second-largest garment exporter in the world. The Bangladeshi economy is therefore heavily dependent on this sector.

Statistical data on the RMG sector is either not readily accessible or is unavailable.[17] For example, there are conflicting reports as to how many garment factories and workers there are in the country. Estimates of the number of factories vary from more than 4000 to over 5,000,[18] while figures for the total numbers of workers employed in the factories range from 3 million to 3.6 million.[19]

Around 30% of RMG exports are shipped to the US while over 50% is destined for the EU. Bangladesh is the third largest garment supplier to the EU after China and Turkey. [20]

Bangladesh's high RMG production rate is attributed to the availability of large numbers of unskilled and low cost labour. The lack of alternate employment and widespread illiteracy encourage people to seek employment in the RMG sector despite low wages and unsafe working conditions. While the majority of the Bangladeshi population depend on agriculture for their livelihood, garment factories offer the highest number of jobs in the industrial sector.

Problems in RMG sector

Despite its remarkable growth, Bangladesh's RMG industry has several problems such as increasing wage pressures, social and environmental compliance scrutiny, and a more competitive international environment. To maintain its market position, the industry urgently needs to enhance its social, environmental and production standards.

The main problems for garment sector workers include low wages, poor social and economic standards, and an overall lack of freedom of association and collective bargaining.

The average monthly wage for a garment factory worker is around US$43 (€32) compared with an average in China of 700-1000 Yuan (€83 -155) in 2011.[21] Workers have increasingly been protesting against these low

wages and the low minimum wage, which often acts as a maximum. Major protests prompted the government to increase the minimum wage to Tk.1662 (US$20, €15) in October 2006. Following further demonstrations in July 2010, the government increased the minimum wage for garment workers to Tk.3000 (US$40, €30). This new minimum took effect in November 2010. But experts estimate that 10% of factories have yet to fully implement this minimum wage. In addition, the current minimum wage is still far from a living wage which would ensure the garment workers a decent living. While the living wage estimated for a single person is around Tk.6000 (US$80, €60), a family of two adults and two children would need more than Tk.12,000 (US$122, €92) according to the Asian Floor Wage Alliance.

Less than 1% of Bangladesh's RMG workers are unionised. Workers, 20% of whom are illiterate, are reluctant to unionise for fear of losing their jobs and trade unions and their representatives are often harassed, dismissed and beaten. Excessive overtime is yet another issue, with garment workers working on average 11 hours per day, six or even seven days a week.

The denim sector

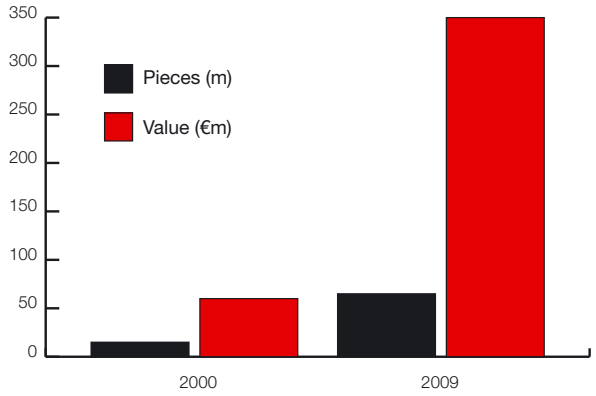
Together the EU and the US make up over 80% of Bangladesh's annual garments exports. In 2009 Bangladesh accounted for about 19% of the jeans imported to the EU.[22] Denim jeans are Bangladesh's top apparel exports. In 2009 Bangladesh accounted for about 19% of the jeans imported to the EU.[23]

However while export volumes to Europe have risen, prices have been falling. The average price per piece has dropped from €5.34 per piece in 2000 to around €4.17 in 2009, a decline of around 22%, making Bangladesh's jeans cheaper than those of competitor nations in the European market and cheaper now than before despite rising costs, revealing all too well the real decline in wages in Bangladesh.[24]

The US is the second most important export market for Bangladesh's garments. Prices in US dollars have risen from $4.89 in 2000 to $5.79 in 2009, an increase of approximately 18%.

Extrapolating from the above figures, based on the knowledge that the EU accounts for 50% of Bangladesh's jeans exports and the US 25%, we estimate that in 2009 Bangladesh exported around 170 million pairs of jeans worth around $880 million. Further, given an average 10% increase in export growth we conservatively estimate that Bangladesh exported more than 200 million pairs of jeans in 2011.

Growth in jeans exports from Bangladesh to the EU, 2000 vs 2009



How much denim production uses sandblasting?

Given the difficulties in obtaining figures for the denim sector, it is almost impossible to estimate the total amount of sandblasted denim products manufactured and exported by Bangladesh. We can only provide figures that were given to us through our in-depth interviews.

The Export Promotion Bureau (EPB) factory list shows that in 2010 more than 1500 factories produced trousers, shorts, pants and jeans in Bangladesh. The German Agency for International Cooperation (GIZ) states that the Bangladesh garment sector comprises around 1500 washing and dying factories.[25]

Our research would suggest that a significant amount of the jeans manufactured in Bangladesh will have gone through some kind of finishing process. One washing plant manager who was interviewed stated that in his factory 100% of the exported denim garments are faded using manual or mechanical sandblasting or hand-sanding and that around 50% of their current denim designs require sandblasting and cannot be faded using alternative methods.[26]

Another factory manager interviewed stated that around 60% of their denim products are faded and that 60% of these faded denim garments are done using sandblasting meaning that about 36% of the total denim products there are faded by sandblasting.

Taking as a rough guide an average of these two figures we can estimate that around 43% of the estimated 200 million pairs of jeans produced for export are sandblasted.This suggests that about 86 million pairs of sandblasted jeans were exported by Bangladesh in 2011.

Quantifying the washing plants doing sandblasting

Sandblasting and the other denim fading techniques are part of the denim treatment method called washing. Washing comes after sewing in the production process, and is followed by labelling, quality control and packaging.

The washing unit may be located within the main factory premises or may be in a separate washing plant. To get an idea of the extent to which sandblasting is done throughout Bangladesh, we need to find out how many washing plants, within or separated from the main factory premises, there are in the country and how many of these washing plants use sandblasting to fade their denim garments.

It is difficult to obtain precise numbers for washing plants. There are many informal, or unregistered, workplaces where sandblasting is carried out and there are no definite numbers for these. Based on various reports, we believe there are around 400 to 700 washing plants undertaking sandblasting in Bangladesh. What is clear from our interviews is that it is common practice for factories in Bangladesh to outsource their denim washing or sandblasted denim orders to other factories, wholly-owned washing plants or independent facilities.

Estimates from factory managers and commentators suggest that around 30-70% of denim washing processes is done in-factory in larger factories with the remaining percentage being subcontracted to smaller washing plant facilities employing up to 10,000 workers, with an overall figure of around 15,000 workers employed in the washing and finishing processes. One washing plant manager interviewed believed that that 70% of the sandblasting is done by the factory itself while 30% is passed on to subcontractors with about 200 such subcontracted factories in Bangladesh.

These workplaces, or subcontracting factories, are engaged by factories because they do not wish to disclose that they use sandblasting; because it costs less to outsource to subcontracting factories or because the main factory premises are short of space or production capacity. Two factors influence the outsourcing decision: economics and risks. Sandblasting is currently a profitable business for manufacturers in Bangladesh because, since the 2009 ban in Turkey, purchasers can no longer get sandblasted denim as easily and cheaply as in the past. This in turn brings better prices for countries such as Bangladesh which are still practising sandblasting. It is estimated that jeans with the faded or worn out look achieved by sandblasting sand can often retail for as much as 180% of the price of normal denim.[27]

One washing plant manager who was interviewed stated that in his factory 100% of the exported denim garments are faded using manual or mechanical sandblasting or hand-sanding and that around 50% of their current denim designs require sandblasting and cannot be faded using alternative methods.

The effect of this outsourcing is that it makes it more difficult for buyers and/or auditors to oversee the fading methods used by the factories.[28]

Number of sandblasters in Bangladesh

It is nearly impossible to estimate how many people work as jeans sandblasters in Bangladesh and official figures are not available. However in spite of the lack of available data, some figures can be obtained if we consider how many denim pieces a sandblaster can produce.

From our interviews we estimate that a manual sandblaster produces about 30,000 pairs of jeans at least per year,[29] while a mechanical sandblaster produces about 40,000 pairs of jeans at least per year.[30] [31] Given the estimated annual export of 86 million pairs of sandblasted jeans, this means Bangladesh has over 2,000 full time sandblasters producing garments for export. But, since these estimations are based on the minimum figures, and bearing in mind the increasing domestic market, the real number could be much higher.

Brands should immediately stop the use of sandblasting throughout their supply chains.

8 Conclusions & Recommendations

An end to sandblasting?

Observations from the study, based on expert and worker interviews, suggest that the manual sandblasting method is being gradually replaced by the mechanical method. Several factories appear to be in the process of shifting from using sandblasting to other techniques such as laser or hand-sanding. Several washing plants have closed down their sandblasting units entirely. However the majority surveyed continue working at full capacity: in fact many smaller workshops focus solely on manual sandblasting. Other factories are simply outsourcing their sandblasted denim orders to subcontractors or are shifting to mechanical sandblasting or other finishing techniques. It is difficult to assess how much of a shift is really taking place given the size of the garment industry in Bangladesh. It is clear however that a sizeable sand-blasting industry, both manual and mechanical, exists in Bangladesh for both the export and domestic markets.

Despite brands being aware of the hazards of sandblasting and the fact that the process has been outlawed in Turkey and heavily regulated in the EU, they have not undertaken sufficient due diligence to ensure such knowledge is passed onto workers.

Brands' ban – easy to say but hard to do?

Denim production for major brands continues to be done using both manual and mechanical sandblasting. Both of these techniques are deadly for the workers. While there has been some impact on the use of manual sandblasting from brands' announcements of a ban on the process, the impact of this has been patchy, poorly monitored and widely circumvented, at least in the majority of factories we investigated.

Workers in factories that continue to use both manual and mechanical sandblasting methods have clearly shown that production for brands which have "banned" manual sandblasting continues to take place, often at night and sometimes with the tacit knowledge of the buyers. Audits are rare and special equipment designed to keep workers "safe" are simply there for show leaving most workers wide open to acute exposure to silica at dangerously high levels. It is also clear from the research that even the simplest of safety requirements such as using imported sand with lower silica levels is ignored in the majority of factories.

Despite brands being completely aware of the hazards of sandblasting and the fact that the process has been outlawed in Turkey and heavily regulated in the EU for many years, they have not undertaken sufficient due diligence to ensure such knowledge is passed onto workers. The only company that has worked at least to an extent with local trade union representatives and NGOs to examine the issue of sandblasting in their supply chain is Gucci. Workers are only sometimes told that the process is dangerous and in many cases they only become aware of the dangers after watching their colleagues fall sick.

Some companies, when announcing a ban on sandblast-ing, said that they would monitor sandblasting in supplier factories. In 2010 H&M said: "Even with our ban, we have decided to continue monitoring sandblasting conditions

Brands must end not only manual but also mechanical sandblasting. They should cease production in any unit which carries out either manual or mechanical sandblasting production.

in supplier factories even though the process is no longer allowed for H&M production. In this way, we are continuing to minimise the health and safety risks to suppliers' workers from sandblasting, and overall to better practices in the industry."[32]

However, given the appalling conditions that sandblasters work in, it is pretty clear that monitoring in the Bangladesh context is extremely difficult and unlikely to be done properly. Workers interviewed stated that ongoing and effective brand monitoring was practically non existent in their factories.

Increasing awareness

The issue of awareness was a major point of focus for this study. Doctors were almost completely unaware that sandblasting is a problem in the garment sector. This raised the likelihood that workers were at risk of being mis-diagnosed and thus unlikely to benefit from early intervention and treatment, increasing their chances of death from silicosis if contracted. Awareness of the connection between sandblasting and silicosis amongst medical specialists needs to be raised so that in the future patients from the sandblasting sector will receive the treatment they need instead of getting misdiagnoses. The situation that is currently observed in Bangladesh is a reflection of the early stages that were also seen in Turkey before doctors became aware that silicosis was affecting sandblasters.

In addition workers are also not aware of the heath risks they face in their work and are forced to work 12 hour shifts in excessively dusty working conditions. Workers need both awareness raising and support and empowerment to enable them to ensure a ban is properly and effectively carried out. There were no unions in the majority of factories reviewed and throughout Bangladesh harassment and threats against union members and officials is high. Workers need to be empowered to speak out against poor and illegal working conditions. They also need to be able to take paid sick leave and be given adequate access to proper levels of medical care and intervention. Currently this is impossible given the appalling working conditions and the lack of paid sick leave in most factories. Not only this but the brands and their suppliers must take full responsibility for providing proper diagnosis and treatment of all workers who may have been exposed to silica in the production of denim garments. Given the apparent inability or failure of brands to ensure a self imposed ban on sandblasting has been implemented, brands must take responsibility for all workers who work in sandblasting, regardless of whether or not they have announced a ban.

Banning all types of sandblasting

Given the obvious hazards of both processes, brands must end not only manual but also mechanical sandblasting. In addition they should ensure that they cease production in any unit which carries out either manual or mechanical sandblasting production. Transparency in the supply chain is essential in ensuring proper monitoring of suppliers, including the publication of supplier /subcontracting supplier lists.

Given the difficulties clearly exposed by this report a voluntary company ban is simply not enough to stop workers from falling sick and dying from silicosis. Governments worldwide should therefore enforce a national ban on the process as well as, where relevant, enforcing import bans on garments which have been subjected to sandblasting. Such bans should be supported by brands.

Despite the obvious problems in enforcing a ban on sandblasting and the possibility that smaller or illegal workshops will continue to clandestinely carry out sandblasting there must be urgent action towards a longer term solution. Currently many factories are in a difficult situation: while they still have sandblasting units operating it is hard for them to implement a ban that has only been imposed by some of their customers. As long as sandblasting units stay open there is always the danger that the factories will continue to use sandblasting for brands that have banned the process in order to save money or to fulfil their targets. The time and price pressure on the factories makes it beneficial for them to continue to use the technique as long as it is not completely banned.

Local researchers undertaking this report have suggested that an outright ban will be difficult due to the general disregard for health and safety laws and a comprehensive lack of knowledge within the supply chain among workers and among medical staff. They recommend that attention be focused on raising awareness among doctors, factory

authorities and workers regarding the use of proper safety equipment and the health hazards of doing sandblasting. This can be done alongside a complete ban on all forms of sandblasting in the garment industry. This also requires brands and designers to stop asking suppliers to produce jeans which can only be made by sandblasting or which look sandblasted unless increased time and money is allowed for the supplier to introduce other methods to achieve the required look.

Recommendations

We call for the following action:

Brands

Brands should immediately stop the use of sandblasting throughout their supply chains. To that end, we demand that companies continue to publicly support a complete ban on sandblasting in their supply chain and ensure that this ban is enforced by using adequate monitoring processes in co-operation with local/factory-based trade unions and NGOs in Bangladesh and wherever they may buy from.

Brands must also ensure that the design and time-line of denim garment orders are adapted to ensure that sandblasting is neither needed nor encouraged in the manufacture of denim garments and that suppliers are not forced to produce products that look sandblasted in a overly short time-frame.

Based on the research in this report it is not enough for brands to simply announce a ban. Brands need to ensure that they produce denim only in factories and plants which do not use any form of sandblasting – manual or mechanical – and which have the highest standards of occupational health and safety. We further ask that brands work with suppliers who wish to phase out sandblasting from the rest of their supply chain in order to support this process.

Given the range of brands uncovered in the research we ask that brands named and others which have also committed to a ban ensure that the technique is completely abolished. Should a single brand lack that leverage, it should increase it, as suggested in the UN Guiding Principles and Framework, “by, for example, offering capacity-building or other incentives to the related entity, or collaborating with other actors”.

In addition, we ask that brands take the responsibility to ensure that workers in their supply chains that have already been affected by silicosis receive adequate compensation, and to also ensure compensation for workers and their families for the financial extra burden that has been caused due to the illness (e.g. inability to work) as well as to provide them with the necessary financial support for medical treatment.

We also call upon brands to work with their suppliers to provide medical check ups and proper diagnostic procedures for the early diagnosis, treatment and compensation for silicosis in all workers who may have been affected by silica exposure, regardless of their job function.

We also ask that brands perform risk assessments when new production methods are introduced. As a basic step brands must, according to the UN Guiding Principles and Framework, undertake extensive due diligence prior to embarking on new or revised techniques for finishing denim.

Governments

National governments should not allow sandblasting in denim production. We demand they make sure that a ban on manual and mechanical sandblasting and occupational health and safety rules to improve the working conditions are enforced.

In addition, we ask that the workers already affected by silicosis get support, social and medical assistance and disability pensions from the State, regardless of whether they worked in the formal or informal sector.

We also call upon the EU to implement an import ban on sandblasted jeans and for companies to support the establishment of such a ban.

International bodies

We ask that the International Labour Organization and World Health Organization include denim-production chains as part of their global programmes to eradicate silicosis. We ask that a specific country programme for the elimination of silicosis is established in Bangladesh. We ask in particular that extensive efforts be given to increasing awareness of the risks of sandblasting and silica in Bangladesh among both workers and the medical profession.

We further ask that the extensive reports of sandblasting being undertaken within the EU itself – notably in Portugal and Italy – be investigated and the process ended.

We ask that multi-stakeholder initiatives and business initiatives dealing with labour standards in the garment industry use their influence to move their members to implement a complete ban on sandblasting throughout their supply chains.

Annex 1 Factory profiles

Factory No.	Total worker numbers	No of workers employed in sandblasting unit	Type of sandblasting done	No. of interviewees + No. of sandblasters interviewed	Products	Buyer name
1.	Around 400	About 100	Both mechanical and manual sandblasting	Total: 10 Sandblasters: 8	Jeans, shirts	H&M, Lee, Diesel
2.	About 340	About 30	Both mechanical and manual sandblasting	Total: 8 Sandblasters: 8	Jeans, shirts, other denim clothing items	Levis, Inditex, D&G
3.	around 400	About 50	Mechanical sandblasting	Total: 11 Sandblasters: 10	Jeans, shirts, other denim clothing items	H&M, Levis, Aries, Lee, Zara, Diesel
4.	40	40	Both mechanical and manual sandblasting	Total: 11 Sandblasters: 11	Jeans, shirts	H&M, Levis, C&A, Inditex
5.	About 200	About 40	Both mechanical and manual sandblasting	Total: 10 Sandblasters: 1	Jeans, shirts, skirts	H&M, Inditex Esprit, Lee, P&M
6.	1300 (Homepage)	About 40	Both mechanical and manual sandblasting	Total: 10 Sandblasters: 2	Jeans, shirts, other denim clothing items	H&M, C&A, Inditex, D&G, Esprit, Lee, Diesel
7.	About 488 (149 employees in washing plant)	About 22	Both mechanical and manual sandblasting	Total: 12 Sandblasters: 8	Woven pants, shorts, shirts, blouses, dresses, and vests etc.	Levi's, Lee, Next, American Eagle, Polo, D Horse, H&M, D&G, Esprit, M&S, Gap, SA Lever, Lang Pang, Tommy Hilfiger, JC Penny, World Disney, C&A, Wal-Mart & Gloria Vanderbilt

Workers from a further two factories were also interviewed. Both of the factories were carrying out both manual and mechanical sandblasting.

(Details of buyers have been taken from open web-based sources and worker interviews. We have not been able to accurately verify these details and claims.)

Endnotes

1 See Fashion Victims, http://www.cleanclothes.at/media/common/uploads/download/fashion-victims-a-report-on-sandblasted-denim/2010-11%20Fair%20Trade%20Center%20-%20Fashion%20Victims%20-%20A%20Report%20on%20Sandblasted%20Denim%20copy.pdf

2 Silicosis: A Review, Michael I. Greenberg, MD, MPH,Javier Waksman, MD, and John Curtis, MD, http://www.sertox.com.ar/img/silicosis_article.pdf

3 CRYSTALLINE SILICA PRIMER, Staff, Branch of Industrial Minerals, U.S. Bureau of Mines (http://minerals.usgs.gov/minerals/pubs/commodity/silica/780292.pdf)

4 hesa.etui-rehs.org/uk/newsletter/files/NWL30-EN-p4-8.pdf

5 Another study published in 2008 found that of 145 former sandblasters examined, 83% had respiratory problems and more than half had developed silicosis. Two patients who had started sandblasting aged 13 and 14 years respectively worked little more than 3 years before both dying within a year of diagnosis, aged 18 and 19 years.

6 While figures from Turkey became more widely available in 2008, the numbers were the tip of the iceberg – indeed many sandblasters in Turkey were migrant workers who had left when they fell ill and have been difficult to contact. In other countries no statistics are available, but the numbers of casualties and potential future victims are estimated to be very high.

7 Observation from a journalist investigating sandblasting in factories

8 Other specific brands mentioned included Aries and P&

9 Report of the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises, John Ruggie, Business and Human Rights: Further steps toward the operationalization of the “protect, respect and remedy” framework, April 2010, http://198.170.85.29/Ruggie-report-2010.pdf

10 David Love, Senior Vice President and Chief Supply Chain Officer at Levi Strauss & Co in Levi Strauss & Co. and Hennes & Mauritz AB Announce Global Ban on Sandblasting, 8 September 2010, (http://www.levistrauss.com/levi-strauss-co-and-hennes-mauritz-ab-announce-global-ban-sandblasting)

11 http://www.tzu.cz/pdf/ruzne/Sand%20blasting%20ban%20in%20Turkey_answers.pdf

12 Preventing Silicosis and Deaths From Sandblasting NIOSH ALERT: August 1992 DHHS (NIOSH) Publication No. 92-102 (http://www.oem.msu.edu/userfiles/file/Blasting/User/Appendix%20IV%20Preventing%20Lilicosis%20From%20Sandblasting%2092-102.pdf accessed 7 March 2012)

13 http://www.levistrauss.com/sites/default/files/library-document/2010/4/Environment,%20Health%20and%20Safety%20Supplement%20to%20the%20TOE%20Guidebook%20-%20English.pdf

14 For example see the Clean Clothes Campaign website for more details: http://www.cleanclothes.org/news/thats-it-sportswear-fire-one-year-on-workers-still-dying-in-unsafe-buildings

15 oshebd.org/news/servey11Jantosep.html accessed 28 February 2011

16 X Ray’s are generally seen as sufficient in many cases in diagnosing silicosis and a biopsy is only used in very rare cases leading to some issues with the position of the doctors interviewed as regards the need for an expensive biopsy for diagnosis.

17 In addition to the data regarding the garments sector being unavailable, garments owners associations like the BGMEA and BTMA are also very cautious about how much information they disclose. Reasons for the non-disclosure could be that the associations lack the information, or that they voluntarily retain the information in order not to harm the garment sector, it having been the focus of several attacks related to social compliance in the past years.

18 The BBC reports there are more than 4000 garment factories in Bangladesh, the GIZ states that the figure is around 4500, War on Want reports it as 4825 factories, and the BGMEA states that there are 5,150 garments factories in Bangladesh.

19 While the GIZ mentions a number of about 3 million garments workers, the BBC reports that there are 3.5 million workers and the BGMEA discloses a figure of 3.6 million garments workers (all in 2011).

20 See various materials incldluing http://www.bizresearchpapers.com/11.%20Munim.pdf / ccsenet.org/journal/index.php/ijbm/article/download/10580/9005 and bibliography

21 http://www.51labour.com/show/165100.html

22 Statistics for woven garments exports are made available by the Export Promotion Bureau (EPB). Denim is not separately categorized and it is almost impossible to find data on denim garment exports. However our researchers were able to extrapolate this information by tracking the destination of exported denim products.

23 Statistics for woven garments exports are made available by the Export Promotion Bureau (EPB). Denim is not separately categorized and it is almost impossible to find data on denim garment exports. However our researchers were able to extrapolate this information by tracking the destination of exported denim products.

24 According to the Confederation of British Industry (CBI) the average price for jeans imported to the EU in 2007 was €9.81: the comparative for jeans bought from Bangladesh with the same destination was only €3.89.

25 On the homepage of its Promotion of Social & Environmental Standards in the Industry programme. http://www.gtz.de/en/weltweit/asien-pazifik/bangladesch/20176.htm

26 For instance, denim garments that use a thinner fabric (such as for women's or children's clothes) or those that have designs on the seams or pockets cannot be faded by methods other than sandblasting. Using methods such as hand-scraping or hand-brushing would risk damaging the design or the garment.

27 See for example Labour behind the Label and "Killer Jeans" report at http://www.killerjeans.org/

28 The claim that sandblasting denim orders are outsourced in order to avoid control checks by buyers and auditors is supported by the fact that a journalist who was interviewed for this report who had visited several sandblasting units stated that in some of them he could not find any labels on the garments.

29 Some workers stated that a single manual sandblaster can produce 35 to 60 pieces per hour; others said 200 to 300 pieces. Combining the two figures gives an average of around 250 pieces per day per sandblaster, or 65,000 per year. If this worker is supported by a helper, they would each be producing more than 30,000 pieces per year.

30 In mechanical sandblasting, a single machine is usually operated on by two alternating teams each consisting of an operator and a helper. One machine can output of 500 to 700 pieces per day. Taking the mean of 600 pieces per day per worker, and 10 hours of work-time daily, a mechanical sandblaster can produce around 40,000 pieces per year at least.

31 Both estimates for mechanical and manual sandblasting assume a worker works for 263 days per year (generous rest days and average leave days are taken) If a worker has been working in the sandblasting unit for over a year and if he takes all the leave he is entitled to, he would have 263 working days.

32 http://about.hm.com/content/hm/AboutSection/en/About/Sustainability/Commitments/Responsible-Partners/Beyond-Monitoring/Partnership-and-Public-Policy/Sand-Blasting.html

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