

# What Dangers Are Lurking in Leather?

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## STORY AT-A-GLANCE

- › The global market for leather goods is staggering, estimated to be around \$200 billion annually
- › Hazaribagh, Bangladesh, turns out 90% of the country's leather, tanned using chemicals that are lethal for workers and individuals who come into contact with the finished product
- › Some designers and retailers refuse to purchase from tanneries where human rights are violated because of chemicals used for processing, ghastly conditions and the young age of many workers
- › Even as some countries are trying to clean up the industry, environmentalists are suggesting leather tanning alternatives, but changing the status quo will undoubtedly impact individuals and families who rely on it to survive

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Walk through the accessories, outerwear and furniture sections of any department store and you'll find an enticing array of handbags, jackets, sofas and armchairs made from "genuine leather." Car interiors are another place you'll find it, with the accompanying coveted smell.

But where does the leather for these items come from? Sure, most of it comes from cows and pigs, although there is a market for leather made from snakes, buffalo, kangaroos and even fish and ostriches.

It may come as a surprise, but the global market for the plethora of leather applications is gargantuan, and even that may be an understatement.

Undark, a digital publication of the Knight Science Journalism Fellowship Program headquartered at the Massachusetts Institute of Technology, estimates it to be around \$200 billion annually.<sup>1</sup> Leather footwear is the biggest seller, worth about \$47 billion. Gloves are next, grabbing around \$12.3 billion.<sup>2</sup>

But where – and more importantly, how – is the leather for these products processed? For this piece, it's not the sources of leather we'll explore, but how it's treated that can negatively impact your health.

## **The Leather Tanning Industry Is Big Business**

The leather tanning industry is big, big business in Bangladesh. In 2016, around 90% of the country's leather is tanned in the capital city of Hazaribagh. Around \$1.5 billion in leather and leather goods were produced in 2015 and 2016 as the second largest export to around 70 countries,<sup>3</sup> the Bangladesh Board of Investment reported.<sup>4</sup>

While Bangladesh has regulations in place concerning how leather is processed, Undark says the magnates behind the country's leather-tanning industry have "spent decades hopscotching across the globe, assiduously fleeing regulation and rising labor costs, and leaving long-lasting toxic footprints at each stop."<sup>5</sup>

At the end of 2016, after years of delays, a crack-down came to the leather industry in Bangladesh. Many tanneries had already moved or closed, and Hazaribagh's remaining 150 enterprises were ordered to do the same or move to the new tannery center of Savar, 14 miles away.

Undark equates the government's attempts to clean up the industry to forcing it to morph from the 19th to the 21st century. It's a conundrum, because cleaning up the **toxic waste** caused by such tanning operations means thousands of people become jobless.

# Big Business, but an Even Bigger Danger to Health and the Environment

Hazaribagh's tanneries have dumped about 5.8 million gallons of untreated effluents (liquid waste) into the Buriganga River. One article described scraps of hide, flesh, **surfactants**, chromium III (known to cause serious skin and respiratory irritation) and **ammonium sulphate**, to name a few. Sadly:

*"The Buriganga itself, once the main source of drinking water for Dhaka, has become so polluted by tannery and other industrial and human wastes that it is widely regarded as unsafe for human use – even as the greater metropolitan area of more than 17 million people struggles with episodic droughts and depleted groundwater supplies."*<sup>6</sup>

A review on **chromium** noted its association with several negative effects for both human health and the environment, because it can easily oxidize to chromium VI, a suspected carcinogen, at very low pH values when oxygen is present, and causes acute and chronic damage to the aquatic environment.<sup>7</sup>

**Chicken as a staple food** may be even bigger in Bangladesh than in the U.S., but testing revealed toxic levels of chromium in chickens from the area, fed tannery scraps. In fact, most people there eat an average of 250 grams of chicken per day, and subsequently ingest four times the amounts of chromium deemed healthy.<sup>8</sup>

One article maintains that chromium salts used to treat leather may not cause problems with brief or occasional contact, but prolonged skin contact may cause dermatitis or other irritation, as production processes can permeate skin in vitro. Experts advise against wearing leather garments such as belts, gloves and shoes.<sup>9</sup>

The problem chromium causes on skin isn't pleasant, potentially causing "dry, cracked, and scaled skin as well as erosive ulcerations that refuse to heal known [as] chrome holes."<sup>10</sup> It's hard to say what damage it causes when it's ingested.

# How Human Health Is Adversely Affected by Tanning Toxins and Dyes

In 1981, the International Agency for Research on Cancer (IARC) reported that researchers had found no link between the industry and the prevalence of nasal cancer among tannery workers.<sup>11</sup> But soon after, studies came to light that not only linked nasal cancer but also **testicular and bladder cancers**.

The studies said the cancers were linked to the dyes or solvents used during the leather finishing process. Then lung and pancreatic cancers began being reported in association with leather dust and tanning.

By the year 2000, scientists also found a link between compounds in Chromium VI and an increased risk of **respiratory cancer**.<sup>12</sup> It's also important to understand that it may cause cumulative damage. Gizmodo states:

*"Unlike the wholly organic methods used by our forebears, the modern leather industry is simultaneously killing the local environment and the people that work there with a toxic slurry of chemicals ... Chromium-tanned leather is the most popular form of producing leather these days, and one of the most noxious.*

*In large doses, such as when chromium-laced waste is dumped into regional water systems, it can damage fish gills, incite respiratory problems, infections, infertility, and birth defects. It can also instigate a number of serious cancers in animals throughout the food chain."<sup>13</sup>*

Further, when chromium's fine dust particles are inhaled, it's not only a lung irritant, but a carcinogen affecting workers' upper respiratory tracts, increasing their risk of lung, sinus and nasal cavity cancers, asthma, bronchitis, polyps and pharyngitis, among other problems.

That doesn't include the appalling number of workers killed or disfigured when they slip and fall into chemical baths and drown or are boiled alive, or those exposed to lime,

tanning solutions, dyes, solvents and disinfectants, which they can breathe in, handle or stand in daily for years or even decades.

## **Does the Fashion Industry Have a Moral Responsibility? Do Consumers?**

In the midst of this, most consumers have no way of knowing where the leather in their boots, jackets or handbags came from unless the companies themselves reveal their supply chains. But a little investigative work may tell you all you need to know.

It goes without saying that the fashion industry, et al, is a leading purveyor of leather products. Some designers and retailers do, however, refuse to purchase from tanneries where **human rights are violated** because of the age of the workers, conditions and chemicals used for processing.

Datamyne, providing data on international trade, reveals via shipping records that \$52.24 million in leather goods were transported from Bangladesh to U.S.- and European-based fashion retailers between January and October 2016. Most now come from sources other than Hazaribagh, however. In fact, Undark notes:

*"Dozens of companies now have statements on their websites espousing support for ethical sourcing, human rights, and sustainable manufacturing processes. But few disclose detailed information about their suppliers.*

*As conditions in Hazaribagh and other tanning centers of the world become more well known, consumers are asking whether the leather in their boots or bags was produced by tanneries that pollute and expose workers to hazardous conditions."<sup>14</sup>*

Richard Pearshouse, author of the Human Rights Watch report, travels often to Hazaribagh and asserts that companies, too, have an obligation to ask these questions.

He believes that because tanning is now becoming known as an extremely hazardous industry, especially where oversight is scarce, business owners and manufacturers must

be held accountable.

*"You need to take reasonable steps to protect your workers – protective equipment, masks, gloves, aprons, to protect against chemical burns – and you do not employ children ... Leather companies should be on notice," he adds, "that if they're importing from Bangladesh, this is the most notorious tanning area in the world."*<sup>15</sup>

## **Leather Danger Goes Further – Check Your Dog's Chew Toys**

A lot of people give rawhide chew sticks to their dogs because they know how satisfying it is for them to carry, bury, chew on and wrestle with something that also helps keep their teeth strong. A lot of those same people probably think those chew toys have some sort of meat or protein in them, and are "some sort of dried-up meat stick," as Dogs Naturally Magazine notes. However:

*"A rawhide stick is not the by-product of the beef industry nor is it made of dehydrated meat. Rather, rawhide is the by-product of the leather industry, so theoretically it is a leather chew."*<sup>16</sup>

The procedure for creating these irresistible chew toys generally involves shipping it, like other leather, from the slaughterhouse to the tannery. The top grain is tanned while the inner part remains "raw." Then it's placed in a chemical bath, presumably to preserve it and prevent spoilage.

Next is a chemical ash-lye solution, which the site calls "a highly toxic recipe of sodium sulphide liming [to] help strip the hair and fat that may be attached to the hides themselves." The next step is chemicals to "puff" the hide for easier splitting into layers. The outer layer is used for things like boots, belts and car seats.

For the "post-tannery" stage, hides are washed and bleached to help get rid of the "putrid leather" smell (using more chemicals if that doesn't do it). Then, rawhide sticks are often painted with **titanium dioxide** to make them a pale, uniform color. Material Safety Data Sheets may list carcinogenic FD&C Red 40 and sodium benzoate; testing might reveal

substances like lead, arsenic, mercury and formaldehyde. Mother Nature Network says rawhide:

*"Can cause digestive issues, including diarrhea ... it can become a choking hazard or even cause dangerous blockages in the esophagus or digestive tract. Sometimes the only way a vet can remove them is through surgery. Rawhide treats can also be prone to salmonella or E. coli contamination or can have trace amounts of toxic chemicals."*<sup>17</sup>

In short, make sure you know what your dog's chew toys contain, as the toxins are just as bad for animals as they are for humans.

## **Alternatives to Using Conventionally Tanned Leather Products**

While there's certainly the argument that leather is a byproduct of animals used for food, and that it's a form of recycling, it might be more accurate to say it's more like a subsidy, The Guardian maintains, adding that giving up leather as part of your wardrobe is an individual choice:

*"Farmers don't sell hides for tuppence ha'penny out of the kindness of their hearts or from a desire to minimize waste. They are in a moneymaking business and need to maximize profits, and the leather industry is worth billions, if not trillions, of dollars annually ...*

*You may want to consider the environmental issues before making a decision. The process of tanning leather is incredibly toxic."*<sup>18</sup>

There are far safer alternatives to the usual chemical treatments, as well as leather recycling. Gizmodo notes that tanning is necessary to keep leather from rotting, but also suggests turning to vegetable, tree-bark or other natural tanning alternatives; however, the finished product isn't as stable or supple as the chemically generated methods.

Synthetically tanned leather is another method, which involves polymers such as Novolac, Neradol, and Melamine, which gives leather a creamy white appearance.

According to Leather Sustainability, a Portland State University project, the leather tanning industry is growing. It, too, lists alternatives, but also notes the impact on individuals and families who rely on leather production to survive:

*"Synthetic leather is also not the only alternative; there are plenty of other plant-based or sustainable and renewable fabrics available such as cork, wood, linen, hemp, cotton, bamboo, ultrasuede, etc. Using these materials in place of leather would make a significant difference in terms of environmental impact. Knowing some of the worst about production methods, what does this suggest, ethically speaking?"*

*While it would seem that bringing leather production to a standstill would be the most logical solution when considering all the harmful effects it has on humans and the environment, putting an end to the leather industry would be devastating for the thousands of families around the world who have become dependent on leather production as their main source of income."<sup>19</sup>*

## **Awareness, Oversight and Ethics**

Regarding regulation, while Chromium VI has been labeled a "**known human carcinogen**" by the U.S. Environmental Protection Agency (EPA), the U.S. Department of Health and Human Services (HHS), the World Health Organization (WHO) and (finally) IARC, this chemical has become strictly regulated. That doesn't mean it's never used, however. As Gizmodo observes:

*"Unfortunately, short of binding UN arbitration or a massive, international boycott against chromium-tanned leather, there doesn't look to be much impetus for these practices to cease. As long as the first world continues to export these sorts of dangerous jobs to impoverished and easily-exploited developing nations, our desire for affordable plush leather will carry a steep price – paid in human suffering."<sup>20</sup>*



## Sources and References

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- <sup>1, 5, 6, 14, 15</sup> [Undark February 21, 2017](#)
- <sup>2, 10, 12, 13, 20</sup> [Gizmodo June 3, 2014](#)
- <sup>3</sup> [Human Rights Watch October 8, 2012](#)
- <sup>4</sup> [Foreign Direct Investment Spring 2015](#)
- <sup>7</sup> [Life / Fit For Reach](#)
- <sup>8</sup> [University of Dhaka August 2014](#)
- <sup>9</sup> [Leathersmithe](#)
- <sup>11</sup> [Indian J Occup Environ Med. 2007 Jan-Apr;11\(1\):3-5](#)
- <sup>16</sup> [Dogs Naturally Magazine 2024](#)
- <sup>17</sup> [Mother Nature Network May 31, 2017](#)
- <sup>18</sup> [The Guardian August 27, 2008](#)
- <sup>19</sup> [Leather Sustainability](#)