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RESEARCH ARTICLE

Health Rights Impacts by Agrochemical Business: Legally Challenging the "Myth of Safe Use"

Carolijn Terwindt*, Shaelyn Gambino Morrison† and Christian Schliemann*

The past decades have seen enormous growth in the agrochemical industry. Its pesticides and fertilisers promise to farmers worldwide an increase in yields and a decrease in labour input. The expansion of the pesticides industry results in tremendous costs to others – in the form of chronic illness, acute injuries, and environmental degradation. Such costs are borne disproportionately by farm and plantation workers in the Global South due to a perilous combination of weak regulation, lack of training and access to information, and meager resources for protective equipment. Agrochemical companies continue to claim that their products are safe when used correctly by farmers and regulated effectively by the state. Advocates have attempted to use litigation as a recourse for challenging the agrochemical industry. Civil litigation against pesticides manufacturers can directly address the injuries suffered from pesticide poisoning, but such lawsuits face a number of challenges and all too often leave workers and farmers without access to an effective remedy. This article explores the potential of complementary litigation which challenges the harmful sales practices of pesticide companies, as well as the precautionary principle, as an alternative to protect pesticide users against hazards.

Keywords: accountability; agribusiness; litigation; pesticide poisoning; personal injury; precautionary principle; right to health

I. Introduction

As the global population increases exponentially, so too does the worldwide demand for food and other agricultural products. Multinational corporations have seized the opportunity created by this demand to develop genetically engineered crops and accompanying agrochemicals in order to increase production while decreasing labour requirements, even though some United Nations experts favour the use of sustainable, agroecology systems.[1] Though this may lower the price of produce for some, the expansion of the pesticides industry results in tremendous costs for others – in the form of chronic illness, acute injuries, and environmental degradation. Such costs are borne disproportionately by those in the Global South as a result of a perilous combination of weak regulation, lack of training and access to information, and meager resources for protective equipment. Our use of the concept "Global South" in this article is in line with the conceptualisation in the book *International Environmental Law and the Global South*, which notes that 'the terms *North* and *South* distinguish wealthy industrialized nations (including the United States, Canada, Australia, New Zealand, Japan, and the member states of the European Union) from their generally less prosperous counterparts in Asia, Africa, and Latin-America'.[2] Despite its heterogeneity, the global South shares a history of Northern economic and political domination, and Southern nations often negotiated as a bloc (the Group of 77 plus China) to demand greater equity in international economic and environmental law.[3]

* Legal Advisor, European Center for Constitutional and Human Rights (ECCHR), Berlin, DE. Contact: terwindt@ecchr.eu, schliemann@ecchr.eu.

† Associate, Bragar, Eagel & Squire Law Firm, NY, US. Contact: gambino-morrison@bespc.com.

[1] Meriel Watts, 'Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides With Agroecology' PAN International (2015) <https://www.panna.org/sites/default/files/Phasing-Out-HHPs-with-Agroecology.pdf> accessed 10 August 2018.

[2] Shawkat Alam, Sumudu Atapattu, Carmen G. Gonzalez, and Jona Razzaque (eds), *International Environmental Law and the Global South* (CUP 2015).

[3] ibid.

Agrochemical companies continue to claim that their products are safe when used correctly by farmers and regulated effectively by the state. Relying on this assumption of safe use, companies continue to export highly toxic chemicals that have been banned elsewhere, and often fail to adequately label chemicals.

Next to advocacy and lobbying for political and legislative change, advocates have attempted to use litigation as a recourse for challenging the agrochemical industry. Such litigation can be broadly divided into two categories: public interest litigation and litigation based on private causes of action. Within the first category, a sizeable number of cases have been initiated in recent years challenging practices including aerial spraying in Argentina,[4] the approval of public pest prevention and management programmes due to the lack of adequate analysis of environmental consequences,[5] revocation of unconditional registration of a neonicotinoid that is very toxic to bees in the US,[6] or the non-disclosure of company documentation containing environmentally relevant information submitted to regulatory authorities in Europe.[7]

In addition to public interest litigation, those affected by pesticides have also opted to pursue civil litigation. Civil litigation against pesticides manufacturers can directly address the injuries suffered from pesticide poisoning, but such lawsuits face a number of challenges, elaborated upon in Section IV of this article, and all too often leave workers and farmers without access to an effective remedy. The number of successful civil litigation cases is very limited. In the database ("Justice Pesticides" run by several non-governmental organisations with global reach) of 66 civil litigation cases related to pesticides, only one fifth are compensation claims for health damages directly against the manufacturer.[8]

The present article addresses both public and civil litigation challenging (the risk of) personal injury to pesticides users and their communities. On the one hand, personal injury may occur as a result of pesticides being marketed in violation of existing safety regulations. On the other hand, personal injury can be seen even where a manufacturing company has fulfilled regulatory requirements. Health damages in the latter case provide increasing evidence of the dangerous reliance on the myth of "safe use". According to the theory of safe use, pesticides may be applied by farmers and plantation workers without any health risks when applicants follow the prescribed precautionary measures (see Section III below). Market approval is frequently based on this assumption, whereas in reality pesticide sprayers often fail to implement the precautionary measures, a situation well known to regulatory authorities and companies alike. Frequently, those applying pesticides do not even have access to personal protective equipment. While health damages have thus turned into a foreseeable risk, the distribution of pesticides continues to be based on this assumption of "safe use".

Using past and pending cases as points of reference, this article highlights the harmful practices of the agrochemical industry and considers potential litigation avenues for challenging the *status quo*, in particular negative health impacts on users and communities. In order to better assess the limitations and chances of litigation, this article proposes distinguishing between civil personal injury litigation and public litigation on sales practices. In the examples, the article draws heavily on the research and litigation experience of the authors in their collaboration with partners in India. The conclusions are based on personal experience, written accounts of pesticides litigation as well as jurisprudence from Argentina, the United States, France, Germany, Spain, the UK, and India. This article sums up the challenges of personal injury litigation and explores the potential of litigation which challenges the harmful sales practices of pesticide companies as a complementary approach to address negative impacts on the human right to health. As an illustration of such sales practices, the article addresses the labelling and export of pesticides. In addition, the article explores the potential of the precautionary principle to challenge the continued reliance on the "safe use" standard. Section II provides a brief background of the health risks associated with the use of pesticides and the global players that are at the helm of the agrochemical business. Section III explores the concept of safe use that underpins the actions of these global players and points out that the assumption of safe use is much closer to myth than reality. Section IV reviews instances of personal injury litigation and the

[4] Cavigliano Peralta, Viviana y otros c/Munipalidad de San Jorge y otros, s/amparo, Juzgado de Primera Instancia de D Juzgado de Primera Instancia de Distrito en lo Civil, Comercial y Laboral de San Jorge del 10 de junio de 2009, Sala II de la Cámara en lo Civil y Comercial de la ciudad de Santa Fe del 9 de diciembre de 2009, Juzgado de Primera Instancia de Distrito en lo Civil, Comercial y Laboral de San Jorge del 21 de febrero de 2011 y nuevamente de la segunda instancia interviniente el 19 de abril de 2012 con aclaratoria del 16 de junio de 2012.

[5] *North Coast Rivers Alliance, et al. v. California Department of Food and Agriculture*, Case No. 34-2015-80002005, Superior Court of California, County of Sacramento, Judgment of 8 January 2018.

[6] *Pollinator Stewardship Council et al, v. US Environmental Protection Agency*, United States Court of Appeals for the Ninth Circuit, No. 13-72346, Opinion of 10 September 2015.

[7] Case C-442/14 *Bayer CropScience SA-NV, Stichting De Bijenstichting v College voor de toelating van gewasbeschermingsmiddelen en biociden* (Reference for a preliminary ruling, Judgment of 23 November 2016)

[8] <https://www.justicepesticides.org/en/juridic-cases/?_sfm_case_nature=Civil%20court> accessed 29 August 2018.

challenges and hurdles faced by claimants. Section V outlines the potential of pesticide litigation to challenge the double standards applied by pesticide companies to business practices in their home countries versus the Global South, including examples of legal challenges to pesticide registration and labeling. Finally, Section VI discusses the potential of the precautionary principle in litigation.

II. Global Health Risks and Global Players

Pesticides are defined as any substance or mixture of substances of chemical or biological ingredients intended to repell, destroy, or control any pest, or regulate plant growth.[9] The health risks associated with pesticides use range from acute to chronic, from irritating to fatal. Examples of acute health impacts include 'fatigue, head and body aches, skin discomfort, skin rashes, poor concentration, weakness, circulatory problems, dizziness, nausea, vomiting, excessive sweating, impaired vision, tremors, panic attacks, cramps', and even death.[10] Pesticide-induced chronic illnesses include, 'cancer, Alzheimer's and Parkinson's diseases, hormone disruption, developmental disorders and sterility [as well as]… memory loss, loss of coordination, reduced visual ability and reduced motor skills', among others.[11] It is estimated that pesticides are responsible for as many as 200,000 acute poisoning deaths per year, '99 per cent of which occur in developing countries'.[12] Other estimates suggest that as many as 25 million agricultural workers could be suffering from some kind of pesticide induced sickness each year.[13] The distribution of pesticide-related injuries is acutely geographically imbalanced: though 80 percent of global pesticide use takes place in the Global North, close to 99 percent of total pesticide poisonings take place in the Global South.[14] Poisoning from pesticides is even more detrimental to those living in the Global South where access to clean water, adequate health care, and sanitation is generally much lower than in the Global North. Studies have found that other circumstances common in the Global South such as malnutrition, dehydration, moist skin and elevated ambient temperatures may all increase the 'toxic manifestations' of pesticides in a person.[15]

The health risks associated with pesticide use are not isolated to those who handle and apply the chemicals directly. Pesticides also affect people who are exposed to the chemicals indirectly, such as communities living near agricultural lands.[16] Furthermore, women are more likely to absorb and store pesticides in their tissues.[17] Female pesticide absorption is particularly dangerous during pregnancy and breastfeeding, as women may pass on the chemicals present in pesticides to their children, leading to miscarriages and birth defects.[18] Children are also at risk of indirect chemical absorption. Children are physically small and their bodies are still in the development stages, making them uniquely vulnerable to the hazardous effects of pesticides. Furthermore, a child's metabolism is different from that of an adult, which allows certain types of pesticides to be absorbed much more quickly.[19] If children have contact with pesticides during certain stages of growth, their development may be stunted or permanently impacted.[20] This is a severe and authentic risk. For example, a number of farmers in India reported that it is commonplace for pesticide containers to be left near wells for use as drinking vessels, and that children use the containers to drink water.[21]

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[9] United Nations Food and Agriculture Organisation, Code of Conduct on Pesticides Management (2013), art 2.

[10] 'Pesticides and Health Hazards: Facts and Figures' (PAN Germany 2012) 5, citing M.C.R. Alavanja, J.A. Hoppin, F. Kamel, 'Health Effects of Chronic Pesticide Exposure – Cancer and Neurotoxicity' (2004) 25 Annual Review of Public Health 155–197.

[11] UN Human Rights Council, Report of the Special Rapporteur on the Right to Food (Effects of Pesticides on the Right to Food) (2017) A/HRC/34/48.

[12] ibid. This figure does not take into account the deaths resulting from purposeful ingestion of pesticides, a common method for committing suicide in the global south. Paula Barrios, 'The Rotterdam Convention on Hazardous Chemicals: A Meaningful Step Toward Environmental Protection?' (2003–2004) 16 Georgetown International Environmental Law Review 679.

[13] ibid.

[14] UN Human Rights Council (n 11) Barrios (n 13).

[15] PAN Asia and the Pacific and Tenaganita, 'Poisoned and Silenced A Study of Pesticide Poisoning in the Plantations' (2002) <https://www.publiceye.ch/fileadmin/files/documents/Syngenta/Poisoned-and-Silenced.pdf> accessed 10 August 2018.

[16] UN Human Rights Council (n 11) paras. 19 et seq.

[17] UNDP, 'Chemicals and Gender' UNDP Environment and Energy Group (2011) <http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/chemicals-management/chemicals-and-gender/2011%20Chemical&Gender.pdf> accessed 10 August 2018.

[18] ibid. PAN UK, 'Impacts of Pesticides on Women and Children' (2017) <http://www.pan-uk.org/effects-pesticides-women-children/> accessed 10 August 2018; World Health Organization, 'Summary of Principles for Evaluating Health Risks in Children Associated with Exposure to Chemicals' (2011).

[19] ibid.

[20] PAN Germany (n 10).

[21] New Media Advocacy Project, 'Inadequate Pesticide Management in Punjab — Farmers Testify' (2015) <https://vimeo.com/155547660/101153a8c1> accessed 10 August 2018.

The global value of the agrochemical market is estimated at 56.6 billion US dollars – a figure that is estimated to grow strongly in the near future.[22] Around 70 percent of the market share is concentrated in the hands of the six largest agrochemical corporations: Bayer (DE), BASF (DE), Dow (US), Dupont (US), Monsanto (US) and Syngenta (CH), which are active at all four stages of the value chain: discovery, development, mixture and formulation, and distribution.[23] However, the market is likely to undergo further consolidation as a result of a recent spate of mergers and acquisitions in the industry – namely a merger between Dow and Dupont, the acquisition of Syngenta by ChemChina, and the acquisition of Monsanto by Bayer.[24] As commodities prices and the demand for pesticides in developing countries falter, agrochemical companies have been searching for a way to sustain and increase the returns for their shareholders.[25] Once the abovementioned mergers and acquisitions are finally approved by antitrust authorities, only four companies will command the vast majority of the pesticide market.[26] While the companies and their shareholders cling to promises of greater efficiency, innovation, and increased profits, other industry stakeholders, such as farmers and small business owners, have expressed significant concerns about what the transactions would mean for them.[27]

The stakeholders' concerns are not unwarranted. Consolidation on this scale means less competition, which may decrease incentives for research and development both within the larger companies and by smaller independent companies, which would find it nearly impossible to get a foothold within the industry.[28] Less research and development in the industry generally could in turn lead to a decreased likelihood of investment in safer alternatives to currently manufactured products. The elimination of competition will also make it much easier for agrochemical companies to fix prices and influence the consumption rates of various products.[29] If businesses decide to raise prices for either seeds or pesticides, farmers may be forced to cut costs in other areas, such as outlays for safety equipment or other labour-related costs.

Finally, mega-consolidation leads to a greater concentration of economic and political power in the hands of chemical companies. The agro-giants will have even more resources for lobbying legislatures, registration of pesticides and battling litigants. Extreme market consolidation also decreases the efficacy and availability of investor and consumer advocacy tools such as strategic divestment.

III. The Myth of Safe Use

Over the course of decades, the pesticides industry has developed the idea of "safe use" as a pillar of support for its continued manufacture and export of hazardous chemicals. The rationale behind the concept is that pesticides are safe when they are used "properly" and "responsibly", when the correct precautions for their use are taken.[30] Examples of such precautions include following the directions that are printed on the container labels, wearing suitable personal protective equipment (PPE), careful storage and responsible dis-

[22] The estimate was done for the year 2014. European Commission, Case M.7962 *ChemChina/Syngenta*, Merger Procedure, Article 8 (2) Regulation (EC) 139/2004 (5 April 2017) paras 21–23.

[23] ibid. paras 29 and 32.

[24] Quan Le, 'Impact of Agrochemical Mega Mergers on Developing Countries' GMX Consulting (2017) <https://www.gmxconsulting.co.uk/single-post/2017/03/30/Impact-of-agrochemical-mega-mergers-on-developing-countries> accessed 10 August 2018.

[25] 'Africa: Agribusiness Giants on Merger Path' *AllAfrica* (20 February 2017) <http://allafrica.com/stories/201702270838.html> accessed 10 August 2018; Jennifer Clapp, 'Monsanto, Dow, Syngenta: Rush for Mega-mergers Puts Food Security at Risk' *The Guardian* (5 May 2016) <https://www.theguardian.com/sustainable-business/2016/may/05/monsanto-dow-syngenta-rush-for-mega-mergers-puts-food-security-at-risk> accessed 11 August 2018.

[26] As of 5 April 2017, both the EU and US antitrust authorities approved the acquisition of the Swiss company, Syngenta, by the Chinese company, ChemChina. In March 2018 the EU commission also cleared Bayer's acquisition of Monsanto albeit with a number of conditions pertaining mainly to diverstiture in monopoly sensitive business activities. <http://europa.eu/rapid/press-release_IP-18-2282_en.htm> The merger of Dow and Dupont has was completed in September 2017 with the creation of DowDuPont holding company.

[27] Brad Plumer, 'Why the Debate Over the Bayer-Monsanto Deal is so Important for the Future of Farming' *Vox* (20 September 2016) <http://www.vox.com/2016/9/20/12988616/bayer-monsanto-dupont-dow-agriculture-mergers-innovation> accessed 11 August 2018. During a hearing held by the U.S. Senate Judiciary Committee entitled 'Consolidation and Competition in the U.S. Seed and Agrochemical Industry' Dupont's Executive VP defended the merger with Dow, stating: 'by combining our complementary strengths, such as DuPont's seed expertise with Dow's trait development, we will be able to respond faster and more effectively to the changing conditions that impact farmers.'

[28] See e.g., Sanjay Sanghoee, 'Mega-mergers are Killing Innovation' *TIME* (6 June 2014) <http://time.com/2837184/mega-merger-innovation/> accessed 11 August 2018; Diana Moss, 'Mergers, Acquisition and Agricultural Biotechnology: Putting the Squeeze on Growers and Consumers?' *Truth on the Market* (30 March 2017) <https://truthonthemarket.com/2017/03/31/mergers-innovation-and-agricultural-biotechnology/> accessed 11 August 2018.

[29] Diana Moss, Testimony before the U.S. Senate Judiciary Committee, 20 September 2016.

[30] *See*, e.g., Letter from Bayer to the FAO re: Ad Hoc Monitoring Report, 13 January 2016, document on file with the authors.

posal of chemicals, as well as adherence to proper agricultural practices for mixing, loading and application of pesticides.[31]

Unfortunately, it is not realistic that such guidelines can or will be followed under the current conditions in the Global South generally. Coherent labels, explanatory leaflets, and proper training are limited or nonexistent. For example, interviews in both the Punjab and West Bengal have revealed that the labels on pesticides containers are often not written in the local native language.[32] In the Punjab, labels are frequently written in Hindi and English, while most local farmers can only read Punjabi, if they are literate at all. Many older pesticide users are unable to read the pesticides labels because the writing on the labels is too small for them to read.[33] Access to, and use of, PPE is also limited due to a lack of supply, low levels of demand because of sparse resources and a lack of awareness of the necessity of using it, or the inability to comfortably or safely use equipment in hot and humid climates.[34]

Even if PPE was made available, it would only be useful if it were affordable, widely available and of adequate quality. Even still, consistent use by farmers would not be guaranteed because of the aforementioned climatic issues, and the PPE would only protect the workers who were applying the pesticides – it would not protect other people from indirect exposure or mitigate the environmental harm caused by pesticide application. Such indirect harm may be experienced by people living near agricultural fields and children at neighbouring schools, impact the reproductive health of pregnant women and fetuses, and even affect international consumers of food products grown in areas where pesticides were applied. The family members and neighbours of pesticide users may also be at risk of harm from indirect exposure to pesticides due to unsafe storage and disposal procedures. For example, one study of 166 pesticide sprayers in Uttar Pradesh, India found that nearly 45 per cent of the participants stored the pesticides they used inside their own homes and 68 per cent discarded empty pesticides containers near a river, canal, or field.[35]

Safe use presupposes an awareness of risks and knowledge of precautionary measures. However, training of pesticide users by the relevant government bodies, with respect to chemical application and protective measures, is often inadequate. Once more drawing from research in India, a reply to a Right to Information request from the District Agricultural Training Officer in Bathinda District of India demonstrated that current governmental efforts to provide training on pesticide use in the area are extremely limited. The government claims to conduct one '"Harvest and Display Camp" per village per month in the district, but these "camps" do not include instructions on safety or information about the hazards of agrochemicals.[36]

The lack of training is exhibited by the common work practices of some Indian pesticide users. The study of 166 pesticide users in the Lucknow Province of Northern India found that all of those interviewed handled pesticide containers with their bare hands and none used gloves, goggles and an apron while spraying. Nearly 40 per cent of interviewees mixed the pesticides with their bare hands and around 70 per cent washed their contaminated clothing together with their families' clothes.[37] Another study – conducted by the pesticide company NovartisAgribusiness (prior to its merger in 2000 with Zeneca which created Syngenta) – aimed at measuring the efficacy of training on the knowledge, attitude and practice of farmers in Tamil Nadu, India – found that even when training does occur and knowledge increases, safe practices may not be maintained when they are costly or otherwise inconvenient.[38]

Another factor complicating the idea of "safe use" that underlies current pesticide approvals is the inconsistent and incomplete testing of agrochemicals. Pesticide companies and regulatory authorities rely on inadequate safety testing of the chemicals contained in pesticides. Pesticides may have different effects depending on the characteristics of the environments in which they are applied, or if they are combined

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[31] CropLife 'Guidelines for the Safe and Effective Use of Crop Protection Products' (2006) <https://croplife.org/wp-content/uploads/pdf_files/Guidelines-for-the-safe-and-effective-use-of-crop-protection-products.pdf> accessed 11 August 2018.

[32] See Christos Damalas, Muhammad Khan, 'Farmers' Attitudes Towards Pesticides Labels: implications for Personal and Environmental Safety' (2016) 62(4) International Journal of Pest Management 319 – 325; 'New Media Advocacy Project 2015 (n 21); ECCHR, 'Ad Hoc Monitoring Report Submitted to the FAO/WHO' <https://www.ecchr.eu/en/business-and-human-rights/agro-industry/fao-who-complaint.html> accessed 11 August 2018.

[33] See Damalas; ibid.

[34] Article 3.5 of the Code of Conduct on the Distribution and Use of Pesticides.

[35] Mohammad Fareed, Manoj Kumar Pathak, Vipin Bihari, Ritul Kamal, Anup Kumar Srivastava, Chandrasekharan Nair Kesavachandran, 'Adverse Respiratory Health and Hematological Alterations Among Agricultural Workers Occupationally Exposed to Organophosphate Pesticides: A Cross-Sectional Study in North India' (2013) 8(8) *PLOS* ONE <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0069755> accessed 11 August 2018.

[36] ECCHR (n 32).

[37] Fareed (n 35).

[38] John Atkin and Klaus Leisinger, *Safe and Effective Use of Crop Protection Products in Developing Countries* (OUP 2000).

with other pesticides. Testing related to the effects of cumulative exposure to multiple pesticides, as well as the specific effects of pesticide exposure on children, is severely lacking.[39] Generally, the testing of pesticides is quite limited, but even more so in the Global South where research, resources, and training are scarce.[40] These considerations coalesce, transforming the concept of "safe use" into a patent myth.

IV. Civil Litigation for Pesticides-Related Injuries

In order to seek legal redress for the harms caused by the pesticides industry, those affected have turned to litigation. Such cases against pesticides manufacturers have the potential to provide claimants with compensation for their injuries, but also face a number of shortcomings and challenges. Jurisprudential research in a number of countries (UK, Argentina, India, United States, Germany, France, and Spain) yielded only a small number of cases in which those affected by pesticides poisoning filed a lawsuit against the manufacturer.[41] Two cases – the *DBCP* and *Lasso* cases – are useful in illustrating the potential of, and the obstacles involved in injuries-based litigation.

An initial hurdle is that the law requires a plaintiff to show that a particular pesticide was responsible for the injury alleged. Showing this is exceptionally difficult in the context of pesticides-related injuries: unlike an injury such as asbestosis, which has a unique, scientifically-proven causal link to a hazardous product, pesticide-related injuries, like cancer or kidney disease, may generally be caused by many different factors. In addition, most pesticide users spray multiple pesticides over the course of many years. While proving causation is not an impossible feat, it is therefore difficult scientifically, absent exceptional circumstances. In addition, where strict liability does not apply, claimants also have to prove fault on the part of the defendant company. Strict liability overcomes this problem by assuming fault on the part of the manufacturer where dangerous goods are concerned or deficient products are marketed and covered by product liability legislation. In the case of pesticides, however, some jurisdictions (e.g. the Philippines) largely exclude pesticides from the product liability regime.[42] Therefore, causation and fault are among the major stumbling blocks for personal injury litigation due to pesticide poisonings.

The *Lasso* case in France is one example in which exceptional circumstances were present– allowing the plaintiff to overcome the hurdle of proving causation – primarily because the injury occurred as the result of a single accident involving one single pesticide. In 2004, a French farmer named Paul François inadvertently inhaled the Monsanto pesticide, Lasso, after accidentally spraying himself in the face. He immediately lost consciousness and continued to experience serious neurological symptoms such as memory loss and vertigo.[43] Attorneys for Mr. François asked the court to find Monsanto liable for his injuries because it failed to inform the consumer about the risks of inhaling the inactive ingredient monochlorobenzene in Lasso. Since Francois was unaware of the high volatility and danger of monchlorobenzene he could and did not take the necessary precautions.[44] Lawyers for Monsanto insisted that there did not exist a sufficient causal link, yet the courts of first and second instance accepted that Lasso was the cause of the injury and held that Monsanto was indeed responsible for François' poisoning.[45] By virtue of a July 2017 order of the next appeal instance, the Cour de Cassation refered the case back to the lower court on the grounds that it did not sufficiently take into account product liability law.[46] This order in fact quashes the prior decision and necessitates a reappraisal of both the question of inadequate labelling (i.e. fault) and causation.[47] The case is still pending and the outcome uncertain.

The accident involving a single pesticide thus formed the context in which François was able to prove causation. More commonly, pesticide-related injuries are the result of prolonged exposure. Such was the case in the long-running *DBCP* case against pesticides manufacturer Dow Chemical and others (Dole, Shell,

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[39] Meriel Watts, *Poisoning Our Future: Children and Pesticides*, (Pesticides Action Network Asia & the Pacific 2013) 3, 106.

[40] Barrios (n 12).

[41] Summaries of the unearthed legal cases on file with the authors. Also a collection of litigation on <www.justicepesticides.org> shows that only a very small number of cases is filed by or on behalf of those affected by pesticides poisoning against manufacturers.

[42] According to the Consumer Act of the Philippines, pesticides are by definition not considered as hazardous good and unlike drugs and cosmetics are also not separately treated in the Act. Article 4 (ak) (2) The Consumer Act Philippines, Republic Act No. 7394, April 13, 1992.

[43] 'Monsanto jugé responsable de l'intoxication d'un agriculteur francais' *Le Monde* (13 February 2012) <https://www.lemonde.fr/societe/article/2012/02/13/monsanto-juge-responsable-de-l-intoxication-d-un-agriculteur-francais_1642727_3224.html> accessed 11 August 2018.

[44] See judgments: Tribunal de Grande Instance de Lyon, Quatrième Chambre, R.GN°07/07363, Numéro 2012/144, Jugement du 13 Février 2012, page 2; Cour d'appel de Lyon, 10 September 2015, N° 12/02717.

[45] See judgments: Tribunal de Grande Instance de Lyon, Quatrième Chambre, R.G N° 07/07363, Numéro 2012/144, Jugement du 13 Février 2012, page 2; Courd'appel de Lyon, 10 September 2015, N° 12/02717.

[46] See judgment No. 284 of 7 July 2017 (15-25.651) – Court of Cassation – Mixed Chamber – ECLI: EN: CCASS: 2017.

[47] Judgment No. 284 of 7 July 2017, note 47.

Chiquita, and Occidental Chemical) for the sterilisation of plantation workers in Central America. In the late 1970s, it was discovered that employees at a U.S. plant where the chemical dibromochloropropane (DBCP) was produced were becoming sterile as a result of their exposure to the chemical. DBCP was immediately banned in the U.S., but companies continued to export it to Africa, Ecuador, and the Philippines throughout the early and mid-80s where it was used by workers in banana plantations.[48] In the 1980s workers began to file suits in both Nicaragua and the United States, alleging that the chemical had caused them to become sterile and seeking remuneration. Though the agriculture workers suffered from a number of different diseases that may have been caused by their exposure to pesticides, attorneys for the plaintiffs decided to strategically focus on the sterility issue because it is a rare condition to find, especially in such high concentration and the connection between the pesticide and sterility had been previously established. That strategy proved successful: courts in both the United States and Nicaragua found that the pesticide was responsible for the plaintiffs' injuries.[49] Due to the focus on sterility, the lawyers were thus able to meet the evidentiary standard to prove causation.

While the DBCP lawsuit initially constituted a legal victory, the companies sought to discredit the plaintiffs by accusing their attorneys of participating in fraud, colluding with members of the Nicaraguan justice system, and bribing witnesses. Years later, a hard sought multi-million dollar jury award in favour of the plaintiffs was vacated in 2011 and the Eleventh Circuit subsequently refused to enforce a judgment awarded to the workers in Nicaraguan court.[50] Although this case is a useful example of the potential for litigating such cases, it is also illustrative of the real challenges of litigating directly against powerful companies.

These two cases present legal victories, even if only partially, with respect to proving causation and fault. However, they also show the limited value litigation may have to many pesticides users suffering from chronic medical conditions and their inability to put in place the recommended precautionary measures. In the case of Francois, causation was not disputed because he was directly injured after the inhalation of only one pesticide. In the case of the Nicaraguan workers, sterility was already recognised in the United States as a consequence of DBCP and, therefore banned. In many cases, though, injuries develop after the use of a number of different pesticides, or as a result of indirect exposure to pesticides. Such injuries may make causation far more difficult to prove,[51] a challenge that is even more acute in environments where many risk factors are present, such as high levels of air and water pollution, insect-borne diseases, low levels of sanitation, or inadequate access to nutrition, to name only a few. Furthermore, many farmers and plantation workers simply do not go to a doctor for treatment. Clinics frequently only prescribe painkillers and the patients then lack a medical record to prove the start and development of the symptoms.[52]

As to proving fault, in the *Lasso* case, fault by Monsanto could be shown by the lack of appropriate information and warnings about the inactive ingredient on the label. Furthermore, in the *DBCP* case the health risks were known to the defendant companies who nevertheless continued to market their product without informing the agricultural workers, leading the lower court to award damages. Thus, claimaints will not easily receive compensation if the marketing complies with existing regulations or a public acknowledgement of the relationship between substance and health damage is lacking. This puts those users at a severe disadvantage who due to climatic conditions, lack of financial resources or sheer availability are not able to wear protective equipment.

Another legal challenge in such cases is the statute of limitations, which may make it difficult for claimants and their lawyers to prepare a case within the limited time available. People with pesticide-related illnesses may not exhibit symptoms or realise their illnesses until long after the exposure to pesticides occurred. In many countries, the clock starts ticking on the statute of limitations time-period once a person discovers the harm. Limitation periods for a tort claim are often very short, generally ranging between one and five years.[53] If an injured person does not bring a suit within that time period, their claim and ability to receive compensation will be barred.

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[48] Diana J. Schemo, 'U.S. Pesticide Kills Foreign Fruit Pickers' Hopes' *New York Times* (1995) <http://www.nytimes.com/1995/12/06/world/us-pesticide-kills-foreign-fruit-pickers-hopes.html?pagewanted=all> accessed 11 August 2018.

[49] *Tellez v. Dole Food Co.*, No. BC312852, 2008 WL 744052 (Cal. Super. Ct. L.A. Cnty. Mar. 7, 2008) (trial order); for the Nicaraguan cases *see* Paul Santoyo, 'Bananas of Wrath: How Nicaragua May Have Dealt Forum Non Conveniens a Fatal Blow Removing the Doctrine as an Obstacle to Achieving Corporate Accountability' (2005) 27(3) Houston Journal of International Law 703, 729–733.

[50] Coram Vobis Ruling, *Tellez v. Dole Food Co.*, 2008 WL 744052 (Cal. Super. Ct. Mar. 11, 2011).

[51] UN Human Rights Council (n 11) para. 9.

[52] Personal conversations of the authors with plantation workers in the Philippines and farmers in India (September 2014, March 2015, June 2016).

[53] For example, most states in the United States have a two-year limitation. See e.g., § 735 ILCS 5/13-202; Cal. Code Civ. Proc., § 340.8; in India the limitation period for tort based litigation is even shorter and actions expire in one year, Limitation Act, Schedule, Part. VII – suits relating to tort, No. 72.

Other practical hurdles similarly impede many users from initiating civil litigation. While the pesticide users in the *DBCP* and *Lasso* cases were willing to initiate litigation, a significant hurdle to injuries-based litigation is actually that pesticide users who have been injured may not be willing to participate in a process that could put their job or personal security at risk. Non-unionised plantation workers, or farmers who work in areas in which the chemical companies have a particularly influential presence may find that it is not in their best interest to be associated with legal action. Such reluctance is often based on real experiences in which workers are intimidated into remaining silent about the abusive conditions they endure.[54] Potential plaintiffs may also have suffered so greatly from their injuries that they are not physically or mentally capable of participating in a suit.

The number of cases on behalf of workers and farmers suffering from pesticide poisoning is completely disproportionate to the number of poisonings. Often, due to the myriad challenges mentioned above, the injured are left without access to a remedy. To address the widespread harm caused by pesticides, advocates have taken different legal routes, which are worthy of examination. The next section explores the potential of litigation that confronts the double standards in pesticide sale and distribution as an alternative legal avenue to protect pesticides users.

V. Public Litigation for Harmful Sales Practices

If injury-based litigation is not feasible, litigation focused on the inadequate sales practices of agrochemical companies is another way to seek enhanced protection against the harm caused by pesticide use. Inadequate sales practices include misleading advertising, lack of training and protective clothing, or the lack of health warnings and user instructions on the label. An example of litigation concerning misleading advertising is a 1996 complaint with the Consumer Frauds and Protection Bureau in New York. The claim successfully established that Monsanto's advertisement of Glyphosate falsely described the pesticide as 'less toxic to rats than table salt following acute oral ingestion'.[55] It is vital that such litigation shows how and why sales practices are inadequate. This can be done through reference to the scientific assessment of the regulatory authorities as was done in the New York complaint. In the event that such research is absent or otherwise unavailable, the inadequacy of sales practices can be established by comparing the disparate standards of the distribution and use of pesticides in the Global North and South.

There is a multi-tiered systematic failure with respect to pesticide safety. The first issue is that poisonous chemicals that have been banned in the home countries of the European agrochemical companies are exported to, or manufactured by, subsidiaries in countries in the Global South, such as India.[56] To ensure that importing governments are at all times informed about the restriction and banning decisions of other governments, the Rotterdam Convention implements a system to facilitate information exchange systems and "Prior Informed Consent" (PIC) for the import of a number of listed pesticides.[57] Yet, states maintain the freedom to decide whether such information warrants the prohibition of import, and the PIC obligation only exists for the limited number of pesticides that were agreed to put on the list. For example, despite lobbying by civil society groups, Paraquat has not been listed as a substance covered for the PIC procedure under the Convention.

Since a number of Northern states have now prohibited certain hazardous pesticides that are still used in many countries of the Global South, the Rotterdam system has not led to a harmonisation of pesticide distribution. For example, while the registration of the pesticide Paraquat has not been renewed in the EU, it is easily available in India, where it is not even limited to "professional use". In the EU, if a pesticide is approved only for professional use, pesticide users are required to obtain a certificate, which can only be obtained

[54] See 'Indonesia: Government Must Investigate Wilmar Labour Practices as Company Attempts to Cover up Abuse Claims' (Amnesty International 2017) <https://www.amnesty.org/en/latest/news/2017/03/indonesia-government-must-investigate-wilmar/> accessed 11 August 2018.

[55] Attorney General of the State of New York. Consumer Frauds and Protection Bureau. Environmental Protection Bureau. 1996. In the matter of Monsanto Company, respondent. Assurance of discontinuance pursuant to executive law §63(15). New York, NY.

[56] Marcelo Firpo Porto, Bruno Milanez, Wagner Lopes Soares & Armando Meyer, 'Double Standards and the International Trade of Pesticides: The Brazilian Case' (2010) 16(1) International Journal of Occupational and Environmental Health 24–35; Danny Hakim, 'This Pesticide is Prohibited in Britain. Why is it Still Being Exported? *The New York Times* (20 December 2016) <https://www.nytimes.com/2016/12/20/business/paraquat-weed-killer-pesticide.html> accessed 11 August 2018.

[57] 'The Convention covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons by Parties and which have been notified by Parties for inclusion in the PIC procedure'. <http://www.pic.int/TheConvention/Overview/tabid/1044/language/en-US/Default.aspx> accessed 11 August 2018.

after specific training, the parameters of which are stipulated in detail in the relevant EU Directive.[58] This system makes the functioning of the EU pesticide market enormously different from that in India, where – in the personal experience of the authors – anyone can enter a store in the small villages in Punjab and purchase highly hazardous pesticides. The Indian Insecticides Act (1968) and Insecticides Rules (1971) lack such licensing system for users.[59] The double standard for export and registration is worsened by the double standards applied with respect to the labeling of chemicals: the labels on pesticides distributed in the Global South often lack key safety information or legible warnings. Finally, as already elaborated in earlier sections, there are considerable differences in the availability and use of protective equipment, as well as training, and disposal practices. In a variety of legal proceedings, advocates have challenged such registration and labeling practices on the basis of these double standards.

In his latest report after his visit to Germany, the United Nations Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes expressed his deep concern regarding the double standards that currently exist:

> 'Although many highly hazardous pesticides are banned or restricted in the European Union because their safe use cannot be guaranteed, European businesses continue to produce them, sometimes specifically for export and use in non-European Union countries without adequate legislation or enforcement of existing laws, creating unmanageable risks and a high likelihood of grave impacts to human rights'.[60]

This double standard is problematic in its own right, but is particularly troubling when one considers that the agriculture-producing countries with the fewest regulatory protections, the most limited access to safety information, and the fewest resources with which to purchase safety equipment are those that are most routinely exposed to the most hazardous chemicals. The FAO highlights in its Guidelines on Registration of Pesticides: 'the increasing complexity of evaluation and assessment of pesticides […] requires substantial resources and adequate national infrastructure', which many countries, where innumerable pesticides damages occur, may simply not have.[61]

Registration of pesticides may, therefore, be contingent on a regulatory process that will never actually be carried out or effectively monitored. The *Tauccamarca* case in Peru brought to light the huge gaps between protective Peruvian pesticide regulations and the practice of post-registration regulation. In 1999, 24 children in the small Andean village of Tauccamarca in Peru died after accidentally ingesting milk that was contaminated by the pesticide methyl parathion.[62] A bag of powdered milk was filled with the pesticide and accidentally left in a bag on a village doorstep where it was found by a child, brought to school, and subsequently consumed by the students who thought it was milk powder.[63] The pesticide is categorised as 'extremely hazardous' by WHO and was, therefore, required by Peruvian law to be registered as a 'restricted use' chemical – only to be sold to a buyer under specific conditions. Contrary to Peruvian law, no licensed agronomist ever visited the village and the sale of the deadly pesticide was not limited to a buyer with a "technical prescription" – instead it was freely available for purchase around the village.[64] The Peruvian Government made no attempt to conceal the gaps between its regulations and enforcement, stating that 'it is impossible [for them] to guarantee regulatory control over the way these pesticides products are sold and used'.[65] A civil claim against Bayer pending in Peru unfortunately has yet to provide the families with any redress.[66]

As the Peruvian case illustrates, a pesticide may be registered as a restricted-use chemical, but given the realities of governmental, economic and social hindrances in the Global South – especially in rural, agricultural areas – this registration often has little effect as it is not supported by the requisite enforcement of such restrictions. Lack of regulations or enforcement increases the chances that the pesticide will

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[58] Directive 2009/128 ordered Member States to set up certification systems for professional users of pesticides.

[59] Insecticides Act [46 of 1968, Dt. 2–9–1968]; Insecticides Rules 1971.

[60] Report of the Special Rapporteur on Hazardous Substances, Baskut Tuncak, UN Human Rights Council, A/HRC/33/41/Add.2 (2016).

[61] 'International Code of Conduct on the Distribution and Use of Pesticides, Guidelines for the Registration of Pesticides' FAO (2010).

[62] Erika Rosenthal, 'The Tragedy of Tauccamarca: a Human Rights Perspective on the Pesticide Poisoning Deaths of 4 Children in the Peruvian Andes' (2003) 9(1) International Journal of Occupational and Environmental Health 53–58.

[63] UN Human Rights Council (n 11) para 10.

[64] ibid.

[65] ibid.

[66] The initial proceedings: Expediente No. 2001-29561-0-0100-j-cl-7, Séptimo Juzgado Especializado de Lima; for further developments in the case until it stalled: Red de Acciónen Agricultura Alternativa (RAAA) Peru, Caso Tauccamarca – Ayuda Memoria (August 2011).

be improperly sold and subsequently misused by purchasers. Post-registration licensing is another area of weakness in the Global South with respect to the control of the proliferation of hazardous agrochemicals. A study conducted by PAN regarding the sale of Paraquat in West Bengal, India found that even though India has laws in place regulating both registration and licensing, retailers still sell highly hazardous chemicals which they are not licensed to sell.[67]

A. Litigation Challenging Double Standards in the Market Approval of Pesticides

As knowledge about the potentially hazardous effects of pesticides and their component chemicals has increased, so too has the number of bans or restrictions on pesticides, particularly in the EU. So as not to incur complete profit loss from the manufacture of pesticides that are banned in the EU, and sometimes in the US, agrochemical companies continue to manufacture the chemicals for export to other countries, primarily in the Global South, that have not banned the chemicals because they lack a strong regulatory framework or the incentive to implement that framework.[68] In the EU, the registration process operates like a floodgate to keep prohibitively hazardous products from entering the stream of commerce. Unfortunately, the same is not true for India, where chemicals – like the highly hazardous Paraquat – are successfully registered and later sold by retailers. A public interest litigation petition (PIL) in India has challenged the double standards in decision-making about such applications for market approval, but the matter remains pending.[69]

The EU Pesticides Regulation 1107/2009 concerning the placing of plant protection products on the market contains a reference to the precautionary principle in Article 1(4):

> 'The provisions of this Regulation are underpinned by the precautionary principle in order to ensure that active substances or products placed on the market do not adversely affect human or animal health or the environment. In particular, Member States shall not be prevented from applying the precautionary principle where there is scientific uncertainty as to the risks with regard to human or animal health or the environment posed by the plant protection products to be authorised in their territory'.

On the basis of the precautionary principle, the EU Court of First Instance of 11 July 2007 annulled the authorisation for the use of Paraquat in the European Union.[70] Paraquat is the third most widely used herbicide in the world.[71] The World Health Organization described it as 'the only highly toxic herbicide of the post-war years'.[72] It is highly toxic to humans and there is no antidote, so it is unsurprising that Paraquat poses a major public health concern, especially in developing countries where access to healthcare may be limited.[73] One small, accidental sip can be fatal and severe acute poisoning may occur through contact with the skin, eyes or through inhalation.[74] There is now also increasing evidence that chronic exposure to Paraquat is linked to adverse effects on the respiratory system, reproductive problems, and Parkinson's disease.[75] The Court concluded that the approval of Paraquat on the basis of the submitted files and studies would lead to a 'breach of the precautionary principle and breach of the principle that a high level of protection should be ensured'.[76] Notwithstanding this lack of market approval in the EU, Paraquat continues to be exported from Belgium and the United Kingdom to a number of countries, including India.[77] The EU

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[67] Dileep Kumar, *Paraquat Dichloride Retailing in India: A Case Study from West Bengal* (PAN India 2017) <http://www.pan-india.org/wp-content/uploads/2017/04/Paraquat-retainiling-in-India_PAN-India-04.2017.pdf> accessed 12 August 2018.

[68] Firpo Porto (n 56) 28–32.

[69] See interim decision: order of August 28, 2015 in the High Court of Delhi at New Delhi, W.P. (C) 8207/2015 & CM No. 17208/2015.

[70] Case T-229/04, *Kingdom of Sweden v. Commission of the European Communities*, Judgment of the Court of First Instance (11 July 2007) ECLI:EU:T:2007:217.

[71] Richard Isenring, *Adverse Health Effects Caused by Paraquat – A Bibliography of Documented Evidence* (Public Eye 2017) 3 <https://www.publiceye.ch/fileadmin/files/documents/Syngenta/Paraquat/PE_Paraquat_2-17_def.pdf> accessed 12 August 2018.

[72] John Madeley, *Paraquat – Syngenta's Controversial Herbicide* (Public Eye 2002) <https://www.publiceye.ch/fileadmin/files/documents/Syngenta/Paraquat/2002_Paraquat_Syngentas_Controversial_Herbicide.pdf> accessed 12 August 2018.

[73] A. M. Sabzghabaee, N. Eizadi-Mood, K. Montazeri, A. Yaraghi, M. Golabi, 'Fatality in Paraquat Poisoning' (2010) 51(6) Singapore Medican Journal 496–500.

[74] United States Environmental Protection Agency, 'Paraquat Dichloride: One Sip Can Kill' <https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-one-sip-can-kill> accessed 12 August 2018.

[75] Isenring (n 71).

[76] *Kingdom of Sweden v. Commission of the European Communities* (n 70).

[77] In addition to India, Britain also exports Paraquat to Brazil, Colombia, Mexico, Indonesia, and South Africa, among other countries; Hakim (n 56).

has codified the legitimacy of exporting banned hazardous chemicals to third countries in a Regulation that simply requires that importers are informed of the properties of the exported chemical.[78]

India experienced the advent of large-scale industrial agriculture, including high inputs in chemical fertilisers and pesticides, in the course of the so-called "green revolution". As a result, the Insecticides Act was passed in 1968 in order to regulate pesticide distribution, sale and use in the country. The Act created a Registration Committee which is tasked with approving or refusing pesticide registration based on whether the chemical is safe for human and animal life.[79] A pesticides purveyor or manufacturer is then required to obtain a license for the operation of their business when it includes the sale of pesticides. In 2014, the registration of 66 pesticides came under scrutiny due to their highly hazardous nature – the chemicals in question were already banned in many other countries and the EU because of the danger they posed to the public. Several of these pesticides are manufactured and sold in India by European corporations such as Bayer CropScience (selling, e.g., Thiodicarb) and Syngenta (Paraquat, Atrazine), who can no longer sell the products in their home countries due to bans.[80]

Indian activists attempted to intervene in the proceedings with a PIL, arguing that no independent experts were present at the relevant meetings, but the claim was prevented from proceeding until after the Committee's final decision was issued.[81] Of the 66 pesticides under review, 47 were approved by the Expert Committee. Undeterred, Indian activists submitted another PIL petition in June 2016. The petition requested the cancellation of the registration of the remaining 47 pesticides and also asked for changes with respect to the Expert Committee, such as the inclusion of independent experts in the proceedings and the addition of public hearings to be held around the country before a registration decision is made.[82] The PIL states that given the reality of how these pesticides are actually used, (e.g., without appropriate protective equipment, lack of proper disposal, etc.) banning the most dangerous pesticides in India is even more critical. The petition was supported by data showing all banning decisions and restrictions in the European Union and the United States. This litigation – still pending – challenges company sales practices, while avoiding the evidentiary challenge to prove causation between a pesticide and an injury in a specific case. It draws on the double standards of sales practices in different countries.

B. Litigation Challenging Deficient Labelling Practices

Labels are integral to consumer knowledge and safety: they may help a person choose an ice cream flavour or prevent a fatal allergic reaction. In the context of highly hazardous chemicals, clear, coherent and abundantly cautious labels are indispensable. In many cases, the labels on pesticides sold in the Global South are nonexistent, incomprehensible, or incomplete and may vary greatly from the labels in the Global North. Not all pesticides will have labels or instruction leaflets by the time they reach the person who will apply them directly, and if they do, they may not be in a language the person understands or contain pictograms that are sufficiently clear and informative.[83] Labels may be the only way a farmer has access to important information such as what PPE (personal protective equipment) should be used, what steps to take in the event of accidental exposure, or even to which crops the chemical should be applied. The problem of insufficient labelling is compounded in the Global South by a higher percentage of illiterate or undertrained users and less access to, or tendency to use, PPE.[84]

Two cases against Bayer in the German and Indian courts provide instructive examples of how the deficiencies in agrochemical labelling practice may be challenged through litigation. In October 2016, a complaint was submitted to the Chamber of Agriculture in North-Rhine Westphalia in Germany against Bayer for breaching the German Plant Protection Act by failing to ensure that warnings on the toxic pesticide Nativo 75 WG were included after export on the product bottles in India. When sold in the EU, the pesticide obligatorily includes a warning that it is 'suspected of damaging the unborn child' and when sold in India, the product contains no such warning.

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[78] EC Regulation No. 304/2003, Information required for exports contained in Annex III.

[79] Section 5 Insecticides Act [46 of 1968, Dt. 2–9–1968].

[80] See the list by the CIBRC: source of import and list of indigenous manufactuerers of insecticides update on 31 December 2017; minutes of 362nd Special Meeting of the Registration Committee held on 22 Decembe 2015 <http://cibrc.nic.in/rcpage.htm> accessed 12 August 2018.

[81] See order of 28 August 2015 in the High Court of Delhi at New Delhi, W.P. (C) 8207/2015 & CM No. 17208/2015.

[82] Order of 22 August 2017 at High Court of Delhi at New Delhi, W.P. (C) 2091/2017.

[83] PAN India (n 67); New Media Advocacy Project (n 21).

[84] World Health Organization, 'Guidelines on the Prevention of Toxic Exposures' (2004) <www.who.int/ipcs/features/prevention_guidelines.pdf> accessed 12 August 2018.

Under the German pesticides law, pesticides may only be exported if the container is accompanied by instructions for use, including information about the potential negative impacts on human and animal health or the environment.[85] Indian customers were likewise uninformed about the necessary protective equipment for skin and eyes. The German pesticides law requires that the UN Code of Conduct on the Distribution and Use of Pesticides is taken into account when exporting pesticides. According to the Code, pesticide exporting countries have to ensure that good trading practices are followed in the export of pesticides, especially with countries that have not yet established adequate regulatory schemes.[86] Besides imposing a fine, the German plant protection service has the authority to take measures to prevent or end violations of the law. It could thus, for example, prohibit the export of Nativo as long as the product was not sold in India with an adequate warning.

This prohibition would serve to comply with Germany's responsibilities under the UN Guiding Principles on Business and Human Rights, a set of guidelines for States and companies to prevent, address and remedy human rights abuses committed in business operations. These principles do not create new international law obligations but elaborate on the implications of existing standards and practices for States and business and were endorsed by the Human Rights Council in June 2011.[87] According to Principle 25, States are required to implement effective remedies to those affected by human rights abuse.[88] This includes the adoption of appropriate administrative or legislative means, such as, in the above case, the prohibition to export Nativo.

The lack of adequate labelling of the Nativo pesticide not only potentially violated the German Plant Protection Act, but also Indian standards. In India, a petition was submitted to the Secretary of Agriculture alleging that Bayer and its subsidiary in India, Bayer CropScience Limited, violated the Insecticides Act 'by failing to exercise due diligence to ensure that the hazardous characteristics of the Nativo product are communicated according to the regulatory regime in India'.[89] Failure to provide necessary warnings constitutes the criminal offense of misbranding under the Indian Insecticides Act. Both suits thus appeal to their respective domestic legal frameworks in order to challenge the misbranding of Nativo and call attention to the potentially hazardous effects this omission has on the people of India.

Litigation about double standards in labelling practices avoids the complicated evidentiary issue of causation that advocates face when participating in injuries-based litigation. This strategy further emphasises that the state should properly assume its role in holding corporations accountable for failing to properly inform pesticides users.[90] If the relevant oversight bodies were willing to take action, the consequences for the pesticides industry would be substantial. In 2014, Syngenta had to pay a penalty of 1.2 million USD to the Environmental Protection Agency in the United States for an incorrect label. A governmental officer confirmed that 'Mislabeled pesticides are dangerous because they may display incorrect warnings and application instructions'.[91] In the case regarding the Bayer pesticide Nativo, the petition to the Secretary of the Ministry of Agriculture, points to the state's authority and mandate to investigate and criminally prosecute violators of the Insecticide Act. The Act provides for punishment in the form of a fine or imprisonment of a maximum of two years.[92] The German plant protection agency also has the authority to impose a fine if it finds Bayer liable of a misdemeanor.[93]

It is highly problematic that, all too often, state authorities shirk their responsibilities. After more than two years, the complaint in India is still pending at the first instance. Likewise in Germany, the authorities were unwilling to take steps against Bayer. In response to the complaint, the Chamber of Agriculture

[85] §25 (2), German Plant Protection Law.

[86] para 3.4.

[87] Guiding Principles on Business and Human Rights, 'Report of the Special Representative of the Secretary General on the issue of human rights and transnational corporations and other business enterprises, John Ruggie' UN Doc. A/HRC/17/31 (21 March 2011) para 14; endorsed by the Human Rights Council in its resolution 17/4 of 16 June 2011.

[88] ibid.; principle 25.

[89] Revision Petition Under Sec. 11 of Insecticide Act, 1968 to the Central Government, submitted by Swadeshi Andolan, Annexure B, para 1.

[90] See (n 45). The court in the French Lasso case cited article 1245-3 of the French civil code in finding that 'a product that has a lack of information as to the precautions necessary for its use is defective'.

[91] Steve Davies, 'Syngenta to Pay $1.2 M for Selling Misbranded Pesticides' *AgriPulse* (16 September 2016) <http://www.agri-pulse.com/Syngenta-to-pay-for-selling-misbranded-pesticides-09162016.asp> accessed 12 August 2018; 'EPA Requires Syngenta to Label Pesticides Accurately' *EPA* (8 May 2014) <http://yosemite.epa.gov/opa/admpress.nsf/8b770facf5edf6f185257359003fb69e/a1bd726f96e6963985257cd2006308b0!OpenDocument> accessed 12 August 2018.

[92] According to Art. 3 (k) (iii) in conjunction with Art. 29 (1) (a) second alternative, 29 (1) (i) Indian Insecticides Act (1968), misbranding of a pesticide by omitting a warning or caution on its label which may be necessary and sufficient to prevent risk to human beings shall be punishable with imprisonment of maximum two years or a fine.

[93] According to § 25 (1) 1 in conjunction with §68 (1) No. 19, §68 (3) of the German Plant Protection Law the violation of the conditions for the export of a pesticide can be sanctioned with a fine of up to 10.000€.

launched an investigation into the export of Nativo. It found that Bayer sends the pesticide to India in 'big bags', which do include a warning about the risks to unborn children, even though these are not present on the product after being repacked by Bayer's subsidiary Bayer CropScience Ltd. in India. Given this situation, the Chamber's department of plant protection responded that it is not obliged to further examine the complaint, opining that the responsibility lies solely with Indian actors. However, such a strict reading of state obligations is clearly mistaken. In the past, the UN Human Rights Committee unambiguously asked Germany to set out clearly the expectation that all businesses domiciled in its jurisdiction must respect human rights standards throughout their operations.[94]

While the complaint did not successfully change the export of Nativo, it did draw attention to the state's obligation to improve its export controls of pesticides. The German Chamber of Agriculture admitted that there was no monitoring of pesticides between 2014 and 2016, stating that they had no 'indication that there were any issues of note arising'. Coincidentally, it was noted that in the same month that the complaint was filed, the Chamber announced that a national working group began working on an export-monitoring system.[95]

There is a potential risk that litigating extensively on pesticides labelling practices will give the impression that proper labeling will lead to safe use. While proper labels are vitally important and "good labeling practice" must be adhered to cohesively, no matter where a company's products are exported, good labels are not enough. Even the most thorough, understandable and complete label will not protect people who are affected indirectly by pesticide application or farmers who are unable to afford or effectively use PPE. It is, therefore, insufficient to focus solely on amending and enforcing proper labelling requirements for pesticides. Such efforts should not be abandoned, but must be part of a greater legal challenge to the myth of safe use. In the following section, therefore, litigation on the basis of the precautionary principle is proposed as a way to provide a more appropriate remedy.

VI. Replacing the Standard of Safe Use With the Precautionary Principle

The safety of a certain pesticide cannot be guaranteed given the dearth of scientific testing and inconsistent proclivities with respect to the use of precautionary measures. One approach that has been used to address these shortcomings is the application of the precautionary principle. As already mentioned above, this principle has been incorporated into a number of EU directives and regulations.[96] In other countries, the principle has been adopted by courts for other purposes such as the prohibition of aerial spraying. For example, in 2002, the High Court of Kerala, in India relied on the precautionary principle in upholding a ban on aerial spraying of the insecticide Endosulfan by the State of Kerala. This pesticide was sprayed in the province of Kasargod for more than twenty years. In the 1990s, doctors began noticing diseases such as epilepsy, cerebral palsy, and severe physical and mental disabilities. Activists noted that these symptoms were unique to the region of aerial spraying and brought the issue to the attention of the authorities.[97] An order to ban the aerial spraying by the Kerala State Pollution Control Board was challenged by the Pesticide Manufacturers and Formulators Association of India in 2002. Relying on the precautionary principle, the High Court of Kerala upheld the order, pending a further decision by the Central Government following their consideration of an expert committee's report:

> '[I]t is not the function of this Court to decide an issue which is essentially a matter for Technical experts to decide…We have, therefore, decided to choose the lesser evil and, purely as a precautionary measure, to impose a temporary ban on the use of Endosulfan'.[98]

A global ban on the manufacture and use of Endosulfan was subsequently negotiated in April 2011 under the Stockholm Convention, which aims to 'protect human health and the environment from persistent organic pollutants (POPs)'.[99] The Stockholm Convention gives eminence to the precautionary principle on a

[94] UN Human Rights Committee, 'Concluding Observations on the Sixth Periodic Report of Germany' (2012) adopted by the Committee at its 106th Session, 15 October to 2 November, CCPR/C/DEU/CO/6.

[95] Letter of the Chamber of Agriculture in response to the complaint (7 November 2016) on file with authors.

[96] See e.g. Article 1(3) EU Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

[97] Amrit Dhillon, 'Childhoods Lost: Disabilities and Seizures Blight India's Endosulfan Victims' *The Guardian* (15 February 2017) <https://www.theguardian.com/global-development/2017/feb/15/childhoods-lost-disabilities-seizures-blight-india-kerala-endosulfan-victims> accessed 12 August 2018.

[98] High Court of Kerala, *Thiruvamkulam Nature Lovers Movement v. Plantation Corporation of Kerala* (2002), O.P. Nos. 20716/2002, 17026/2002, 16300/2002 & 29371 of 2001 para 6–10.

[99] Stockholm Convention Clearing House, 'History of the Negotiations of the Stockholm Convention' (2008) <http://chm.pops.int/TheConvention/Overview/History/Overview/tabid/3549/Default.aspx> accessed 12 August 2018.

worldwide level since 'the conference of the parties [...] shall decide, in a precautionary manner, whether to list a chemical'.[100] So far, only 15 of the most highly hazardous pesticides are listed and contained in Annex A of the Convention that obliges State parties to take measures to eliminate the production and use of the particular substances. For all other hazardous pesticides solutions must be found on the national level. Not only in India, but also in Argentina, domestic courts have, therefore, relied on the precautionary principle in order to ban aerial spraying, and in the EU, the aforementioned case about the registration renewal of Paraquat was resolved by relying on the precautionary principle.[101]

In public interest litigation against government authorities, the precautionary principle is increasingly employed by courts where risk assessments involving scientific and technical questions do not produce a verifiable answer. Being deeply entrechned in public law tradition, mention of the precautionary principle has not been heard that often in civil law court rooms. Yet, in the literature, the precautionary principle is also invoked in relation to civil litigation about hazardous activities, such as the use of pesticides. Its proposed function would lie in surmounting the challenge to prove fault on the part of the defendant – usually the company manufacturing the product.[102]

An illustration of this particular application of the precautionary principle arose in Argentina. In a civil case against an employer, a court relied on the principle in order to address the challenge of proving fault on the part of the defendant. In *Urruchua v. Arata* (2013), the plaintiffs were the wife and two children of an agricultural worker who died after spraying and inhaling Glyphosate for over a week without being provided with protective equipment by his employer.[103] The Argentinean court found in favour of the plaintiffs after ruling that it is the employer's obligation to show that adequate measures were adopted to ensure their employee's health, both under Argentinean law and an applicable ILO Convention. Yet, in the concrete case no such precautionary measures were taken by the defendant, but damages were incurred by the employee resulting in the liability of the former for such injuries of the latter.[104]

By focusing on risk prevention, the precautionary principle emphasises the prevention of harm to people and the environment where scientific or technical uncertainty impedes the risk assessment, thus making it more difficult to prove causation. Unlike critiques levelled against the potentially overbroad use of the precautionary principle in the regulatory arena,[105] introducing the precautionary principle in civil law litigation serves a specific goal. It aims to re-establish equality of arms where affected individuals lack the capacity to prove a causal link between their health damages and pesticide exposure or the negligent behaviour of the defendant company. *Urruchua v. Arata* reflects this point, where the court required appropriate precautionary measures by the employer. The same standard could apply to manufacturing companies who market hazardous pesticides by obliging them to ensure that appropriate precautionary measures are adopted by the end-user. Appropriate warnings on labels and leaflets are but one element to satisfy this responsibility.

This article thus argues that the problematic use practices employed by Indian farmers, for example, are foreseeable and should obligatorily play a role in business decisions about bringing a pesticide on the market. Based on company-wide incident reporting foreseen in corporate codes of conduct,[106] and a fulfilment of the general due diligence responsibility to screen their business activities for potential human rights impacts,[107] frequent "inadequate" use is no myth to companies. The precautionary principle would – in civil litigation – require plaintiffs to only show that the pesticides company has or should have been aware of the general non-adherence to recommended safety standards and consequently should have adopted the appropriate measures to guarantee safe use by e.g. organising available, adequate and affordable stock of personal protective equipment in the vicinity of end-users. Alternatively, companies should refrain from selling their products if they cannot ensure such safe use. Finally, the lack of appropriate testing methods

[100] Stockholm Convention on Persistent Organic Pollutants (adopted on 22 May 2001, entry into force 17 May 2004) <http://www.pops.int/TheConvention/Overview/TextoftheConvention/tabid/2232/Default.aspx> accessed 12 August 2018; art. 8 (9).

[101] See *Peralta v. San Jorge I y II* (2009, 2011, 2012), Chamber of Appeals in Civil and Commercial Affairs of Santa Fe and District Court of the District of Santa Fe in Civil, Commercial and Labor Affairs.

[102] Bruce Pardy, 'Applying the Precautionary Principle to Private Persons: Should it Affect Civil and Criminal Liability?' (2002) 43(1) Les Cahiers de droit 63–78.

[103] *Urruchua Clara, Beatriz (for herself and in representation of her children Ignacio R. and Francisco V Osterrieth) v. Arata, Domingo and others*, civil action (21 August 2013) National Chamber of Appeals in Labor Affairs.

[104] ibid.

[105] Sunstein warns against the use of the precautionary principle in the regulatory arena: Cass R. Sunstein, 'Beyond the Precautionary Principle' (2003) The Law School of the University of Chicago, Public Law and Legal Theory Working Paper No. 38.

[106] See e.g. Principle 11 Product Stewardship Policy of Bayer AG <http://www.bayercentral.com.au/resources/uploads/brochure/file9163.pdf> accessed 12 August 2018.

[107] UN Guiding Principles on Business and Human Rights (n 87) Principle 17.

related to the specific effects on children, women, and in cumulative effects with other chemicals in the environment should lead to a presumption of causation for the company to rebut. This means, in sum, if the use conditions in the real world deviate from the isolated environment of a testing laboratory, there is a reversal of the burden of proof regarding causation between the pesticide and the injury. In the same vein, the UN Special Rapporteurs on the right to food and on harzardous substances have recommended in a recent report to place strict liability on pesticides producers, which, in essence, relies on the same argument.[108] Thus far, though, proceedings on the basis of the precautionary principle have not sufficiently addressed the responsibility of the pesticide manufacturers.

This article recommends that the practical insecurity of the use of pesticides on the ground and the widespread non-adherence to the standards of safe use are sufficiently taken into account. As long as business sales practices are predicated on the myth of safe use, personal injuries of farmers, plantation workers and their communities remain foreseeable for the time to come.

VII. Conclusion

Acute and chronic injury, lack of safety and deep-seated inequity are endemic to the pesticides industry. Despite the severe illness and environmental degradation that the proliferation of toxic agrochemicals has caused, the global market continues apace, with multinational corporations reaping the benefits at the expense of agricultural workers in the Global South. In an effort to hold agrochemical companies responsible for unjust practices that violate statutory and human rights, advocates have turned to injury-based litigation, challenges to the double standards in market approval, exposing deficient labelling practices and the precautionary principle. Each of these avenues is integral to disrupting the *status quo* and each is accompanied by a unique set of challenges. Litigators should not shy away from cases in which those being injured failed to adhere to standards of "safe use". The myth of safe use should be challenged. This can be done by pointing out that such uses (and subsequent health damages) are entirely foreseeable.

Competing Interests

The authors have no competing interests to declare.

[108] UN Human Rights Council (n 11) para 106 d.

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