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For the essay

*"Inventions Seriously Prejudicing the Environment:*

*Can the Precautionary Principle Offer a Way Out?"*

# INVENTIONS SERIOUSLY PREJUDICING THE ENVIRONMENT: CAN THE PRECAUTIONARY PRINCIPLE OFFER A WAY OUT?

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## I. Environment and Patents

Despite various theories justifying the grant of patents, the utilitarian argument that such grant encourages innovation is widely accepted.[1] It encourages optimal investments in research and development by providing market exclusivity so that the costs may be recouped and profits could be obtained.[2] Absent patents, there are lower incentives for an inventor to engage in inventions and innovations due to competition by free-riders. Burk and Lemley, however, note that while such goals are commonly agreed upon, there has been disagreement over how the patent system must be implemented.[3] There have been fundamental disagreements over its scope, its applicability as well as its impact on the societal well-being. One such disagreement has been the extent to which patents are useful in the need for a just transition to a sustainable economy that values our environment.

[1] Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VIRGINIA LAW REVIEW 1575–1696, 1597 (2003).
[2] Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 THE JOURNAL OF LEGAL STUDIES 247–271, 247 (1994).
[3] Burk and Lemley, *supra* note 1 at 1599.

In any case, there can be no disagreement that patents play/must play a role in the transition to a sustainable economy. The 2018 IPCC report has warned that if the *status quo* continues, the average global temperature would increase greater than 2°C, which is disastrous for the human race.[4] Further, the New Nature Economy II Report by the World Economic Forum suggested that there is no future for 'business as usual' and that businesses' agenda must also include roadmap to a "nature-positive future".[5] There is thus a clear mandate that we must alter our production processes so that we do not reach the tipping points beyond which recovery would be impossible.

There are provisions in TRIPs that incorporate environmental and health concerns. For e.g., Art.7 provides that the protection and enforcement of IPRs must be "in a manner conducive to social and economic welfare, and to a balance of rights and obligations". Art.8 also provides that the WTO members may adopt measures "necessary to protect public health and nutrition". Art.27(2) allows member States to exclude from patentability such "inventions, the prevention…of the commercial exploitation of which is necessary to…avoid serious prejudice to the environment". This provision is however discretionary.

This essay examines the scope of section 3(b) of the Patent Act, 1970 which provides that "an invention the primary or intended use or commercial exploitation of which…causes serious prejudice…to the environment" are not inventions within the meaning of that Act. While several scholars have focussed on areas such as green patents, bolstering patent incentives for green innovation, patent commons etc. as means through which patent laws could contribute to an environment-friendly economy, they are concerned with the question of *how* patents must be granted. The question of *when* patents can be denied for environment-harming inventions is insufficiently probed, and there has been scant research on such question in the Indian context. This essay seeks to fill some gap in this regard.

Another reason why such an exercise is necessary is because Art.27(1) explicitly provides that "patents shall be available and patent rights enjoyable without discrimination as to…the field of technology". Thus, it is not possible for a member

[4] Kelly Levin, *8 Things You Need to Know About the IPCC 1.5˚C Report*, WORLD RESOURCES INSTITUTE (2018), https://www.wri.org/blog/2018/10/8-things-you-need-know-about-ipcc-15-c-report (last visited Jun 19, 2021).
[5] New Nature Economy Report II: The Future Of Nature And Business, WORLD ECONOMIC FORUM 8 (2020), http://www3.weforum.org/docs/WEF_The_Future_Of_Nature_And_Business_2020.pdf (last visited Jun 17, 2021).

State to further incentivize environment friendly technologies to the exclusion of other technologies. However, it is possible for a member State to exclude environment harming technologies from patentability.[6]

Therefore, the contribution of the patent regime towards a sustainable economy is two-fold: i) it could prescribe different procedure for the grant of patents to inventions to promote the environment; and ii) it could deny patents to those inventions that cause serious prejudice to the environment. This essay examines the latter.

## II. Exploring Section 3(b) of the Patent Act, 1970

Section 6 of the Patent Act, 1970 provides that an application for a patent may be made for an invention. This 'invention' is defined under section 2(j) of the Act to mean "a new product or process involving an inventive step and capable of industrial application". However, section 3 of the Act provides for various products and processes that are not inventions for the purposes of this Act. Section 3(b) provides that,

"3. The following are not inventions within the meaning of this Act,-

(b) an invention the primary or intended use or commercial exploitation of which could be contrary to public order or morality or which causes **serious prejudice to** human, animal or plant life or health or to the **environment**;"

From a plain reading of the above provision, it is evident that there is no distinction between patent *per se* and the exploitation of the patent, since it covers both these aspects. Further, the distinction of the term 'environment' from other terms such as 'human', 'animal', 'plant' and 'health' could mean that the term 'environment' could encompass the Earth's spheres, i.e. the atmosphere, the hydrosphere, the lithosphere and the biosphere. This interpretation is also in line with the definition of 'environment' under section 2(a) of the Environment (Protection) Act, 1986.

It is relevant here to compare section 3(b) with Article 27(2) of the TRIPs Agreement. Article 27(2) provides that,

[6] Hee-Eun Kim, *Role of the Patent System*, *in* THE ROLE OF THE PATENT SYSTEM IN STIMULATING INNOVATION AND TECHNOLOGY TRANSFER FOR CLIMATE CHANGE 33–56, 47 (1 ed. 2011).

"Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to **protect** *ordre public* or morality, including to protect human, animal or plant life or health or to avoid **serious prejudice** to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law."

Comparing section 3(b) of the Act with Art.27(2) of TRIPs, we get the following:

| **Document** | **Prefix Used** | **Scope of protection** |
|---|---|---|
| TRIPs | Protect | humans, animal or plant life or health |
| TRIPs | Serious prejudice | Environment |
| Patent Act, 1970 | Serious prejudice | humans, animal or plant life or health or to the environment |

Semantically, the term 'serious prejudice' requires a higher standard of proof than the term 'protect'. Further, the word 'protect' connotes a positive obligation whereas 'avoid[ing] serious prejudice' connotes a negative obligation. Hence, the exception provided for in section 3(b) is narrower than that allowed under the TRIPs agreement.

Surprisingly, the Manual of Patent Office Practice and Procedure does not prescribe any methodology to determine what amounts to 'serious prejudice'. It merely provides certain examples which falls under section 3(b), and even those do not provide for any examples concerning the environment.[7] Example (h) provided against section 3(b) could provide us a clue. It provides that,

"However, if the primary or intended purpose or commercial exploitation of a claimed invention is not causing serious prejudice to human, animal or plant life or health or to the environment, such subject matter may be considered to be an invention and may be patentable, for instance, a pesticide."

The above example indicates that section 3(b) is interpreted narrowly. This means that, even if an invention could cause prejudice to the environment, such as a pesticide,

[7] The Office of Controller General of Patents, Designs & Trademarks, *Manual of Patent Office Practice and Procedure* 09.03.05.02 (2019).

if the claims do not *explicitly* suggest harm, section 3(b) would not be attracted. Would section 3(b) be attracted if an invention causes serious harm to an animal but nevertheless is beneficial to the society? Consider the *Harvard/Onco-Mouse* case; the EPO Board of Appeal held that a "careful weighing up" of animal suffering and substantial medical benefit would be necessary to determine patentability.[8] However, as Hee-Eun Kim notes, patent examiners are ill-equipped to evaluate such aspects concerning serious prejudice[9], and given that studies on the impact of an invention on the environment take significant time to reach a conclusion, it is difficult for them to undertake such evaluation. In the context of China, Gao notes that none of the patent examiners took environment interests into consideration while evaluating patent applications.[10] The reason could be that patent examiners are not trained in these aspects. This could also be the reason why there are no Indian judicial decisions that elaborate on section 3(b) of the Act.

The consequences of a lack of jurisprudence on what constitutes 'serious prejudice' are immense. Kolitch provides us with three instances of how a lack of concern for the environment led the USPTO to grant patents for inventions even when they were known to cause serious harm to public health.[11] He notes that the USPTO had been granting patents for CFC (Chloro-Flouro Carbon) related products during when there was scientific uncertainty *and* when there was scientific certainty concerning its impact.[12] With regard to DDT, he notes that the USPTO continued to grant patents for inventions related to insecticidal uses of DDT even when other U.S. agencies banned domestic use of DDT.[13] Further, with regard to asbestos, he notes that the USPTO had been granting patents even if it was known that exposure to asbestos caused severe human illness.[14] While a partial response to these concerns could be that the U.S. does not explicitly exclude inventions that seriously prejudice the environment,

[8] *Harvard/Onco-Mouse*, T 0019/90 – 3.3.2 EPO Boards of Appeal (Oct. 3, 1990).
[9] Kim, *supra* note 6 at 34.
[10] Li Gao, *Greening Chinese Patent Law to Incentivize Green Technology Innovation in China*, *in* PATENTS AND INNOVATION IN CHINA AND HONG KONG 79–105, 5–6 (Yahong Li ed., 2017).
[11] Shawn J Kolitch, *The Proper Scope of Patentability in International Law*, 11 MARQUETTE INTELLECTUAL PROPERTY LAW REVIEW 149–179, 155 (2007); Shawn Kolitch, *The Environmental and Public Health Impact of U.S. Patent Law: Making the Case for Incorporating a Precautionary Principle*, 36 ENVIRONMENTAL LAW 221–256 (2006).
[12] Kolitch, *supra* note 11 at 156; Satish Bhagwatrao Aher, Brij Lal Lakaria & Balram Singh Yadav, *Limitations of Existing IPR Legislations in Managing Emerging Environmental Issues*, 23 JOURNAL OF INTELLECTUAL PROPERTY RIGHTS 270–272, 271 (2018).
[13] Kolitch, *supra* note 11 at 157–8.
[14] *Id.* at 158–9.

nevertheless a lack of jurisprudence coupled with a lack of expertise could also lead to similar consequences. For e.g. an asbestos related product was granted patent in India even in 2007[15], when its harmful effects were recognised several years ago[16].

However, some countries have implemented certain measures to overcome these limitations. For e.g. the Brazilian Patent Regime requires that its Health Surveillance Agency (ANVISA) approves the grant of patent concerning pharmaceutical products and processes.[17] In Kenya, the Industrial Property Act, 2001 provides that inventions contrary to environmental conservation are not patentable[18] and also provides that the Managing Director could "submit the application together with the relevant documents to an examiner or the competent authority for examination as to the patentability of the claimed invention"[19]. Similar provisions also exist in Trinidad and Tobago as well as the Andean Community nations.[20]

It is interesting to note that section 115 of the Indian Patent Act, 1970 grants courts the power to appoint an independent scientific adviser "to assist the court or to inquire and report upon any such question of fact or of opinion…as it may formulate for the purpose". Further, Rule 103(1) of the Patent Rules, 2003 provide that the Patent Office is required to maintain a roll of such advisors and update them annually. It is therefore theoretically possible for the Courts in India to seek expert opinion concerning whether an invention causes serious prejudice to the environment. However, I could not find any such recorded instance from my research.

## III. Can Precautionary Principle Offer a Way Out?

### *What is the Precautionary Principle?*

[15] U.P. Asbestos Limited, *A Process for the Manufacture of Asbestos Fibre Cement and Flyash Products*, 1389/DEL/1999 (2007), http://ipindiaservices.gov.in/PatentSearch/PatentSearch//ViewApplicationStatus.
[16] *See* Consumer Education and Research Centre v. Union of India, AIR 1995 SC 922.
[17] Martha Garcia, *Update About ANVISA´S Role In Pharmaceutical Patent Applications*, MONDAQ , https://www.mondaq.com/brazil/patent/631968/update-about-anvisas-role-in-pharmaceutical-patent-applications (last visited Jun 17, 2021).
[18] Section 26(b) of the Kenyan Industrial Property Act, 2001, https://www.wipo.int/edocs/lexdocs/laws/en/ke/ke001en.pdf.
[19] Section 44(4) of the Kenyan Industrial Property Act, 2001.
[20] Kolitch, *supra* note 11 at 248.

The phraseology of section 3(b), rendering inventions causing 'serious prejudice' to the environment as not patentable, suggests that the precautionary principle could be applied to determine its scope. Nevertheless, can the precautionary principle be applied as a matter of policy? Before delving into this question, it is necessary to examine what exactly this principle means.

The best known exposition of the Precautionary Approach is Principle 15 of the Rio Declaration on Environment and Development which provides that,

"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of *serious or irreversible damage*, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

This principle is said to constitute a weak form, since it merely *permits* "mitigating actions in the absence of scientific certainty about the environmentally harmful effects of an activity".[21] A similar provision also exists in the Convention on Biological Diversity, which notes that "where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat". Further, Annex III of the Cartagena Protocol provides that "lack of scientific knowledge or scientific consensus should not necessarily be interpreted as indicating a particular level of risk, an absence of risk, or an acceptable risk".

On the other hand, a strong precautionary principle *mandates* some sort of action to prevent environmental degradation. For e.g., the Ministerial Declaration of the Third International Conference on the Protection of the North Sea provides that the participants "will continue to apply the precautionary principle, that is to *take action* to avoid potentially damaging impacts of substances that are persistent, toxic and liable to bioaccumulate even where there is no scientific evidence to prove a causal link between emissions and effects".

[21] *Id.* at 226.

Despite these differences, the premise of the precautionary principle is that certain actions may/must be taken to prevent or mitigate the adverse effects of an activity.[22]

In India too, this principle has been recognized by the Hon'ble Supreme Court firstly in Vellore Citizens Welfare Forum v. Union of India[23] and subsequently in several other cases. For e.g. in Democratic Youth Federation v. Union of India[24], the Hon'ble Supreme Court prohibited the use of endosulfan, even if its impact on health and environment were scientifically uncertain. Thus, the principle is not new to India.

*Can the Precautionary Principle be Incorporated?*

Despite the principle being well-recognized, there is no agreed consensus on its applicability[25]. Nevertheless, its intended meaning is clear; as Sandin notes, "if there is (1) a threat, which is (2) uncertain, then (3) some kind of action (4) is mandatory"[26]. Nevertheless, this does not answer questions such as the level of uncertainty required, the extent of actions that can be undertaken etc. Thus, it is difficult to translate the principle into a policy. However, as we have noted above, this has not prevented the Courts from applying this principle, albeit inconsistently, to undertake preventive actions. It is therefore possible that this principle is also incorporated into the patent regime.

However, several scholars have opposed the incorporation of the precautionary principle into the patent regime. Kolitch questions what would be an appropriate extent of prejudice that needs to be shown to prevent an invention from being patented.[27] As a corollary, this would also require the patent examiners to make value judgments, thereby enhancing the subjectivity in the process. As noted earlier, patent examiners are also not trained in this regard. Further, since the harmful effects of an invention cannot be anticipated in a short period of time, the examiners are not

[22] Graham Reynolds, *The Precautionary Principle and its Application in the Intellectual Property Context: Towards a Public Domain Impact Assessment*, *in* INTELLECTUAL PROPERTY FOR THE 21ST CENTURY: INTERDISCIPLINARY APPROACHES 95, 8 (B. Courtney Doagoo et al. eds., 2014).
[23] AIR 1996 SC 2715.
[24] (2011) 15 SCC 530.
[25] Daniel Bodansky, *Law: Scientific Uncertainty and the Precautionary Principle*, 33 ENVIRONMENT: SCIENCE AND POLICY FOR SUSTAINABLE DEVELOPMENT 4–44, 5 (1991).
[26] Per Sandin, *Dimensions of the Precautionary Principle*, 5 HUMAN AND ECOLOGICAL RISK ASSESSMENT: AN INTERNATIONAL JOURNAL 889–907, 891 (1999).
[27] Kolitch, *supra* note 11 at 174.

information-equipped to even make a value judgment.[28] Murphy suggests that if the precautionary principle is incorporated, then it would inhibit generation of knowledge. He notes that if the principle's aim is to disincentivise harmful inventions, then information concerning such inventions is less likely to be generated or made available to the public.[29] Such inhibition of information is contrary to the principle itself since it requires information so as to operate. Further, such information could also be crucial to develop safer alternatives. It is for this reason Murphy suggests that the principle needs to be applied for regulating such invention rather than for the patent themselves.[30]

However, a key advantage of an *ex ante* regulation is that it prevents millions from being poured into research which ultimately is likely to harm the environment.[31] If the regulation occurs post the grant of patent, then it becomes difficult for the patent holder to recoup her investment, and it may even be possible that the patent holder could enjoy monopoly only for a very short period of time. Thus, the incorporation of the precautionary principle eliminates the incentives to develop harmful inventions.[32] This could also incentivize research into safer alternatives, since the premise of granting patents is that they encourage innovation.[33] Further, even the inhibition of knowledge generation may be beneficial; the incorporation of precautionary principle ensures that such information concerning harmful inventions are not disclosed to the public, which results in reduced awareness of these inventions thereby leading to lesser adoption.[34]

Despite the benefits of incorporating precautionary principle into the patent regime, there is some merit in the arguments of its opponents. Clearly, the principle does not provide us with an objective standard to determine what amounts to prejudice. Since patents are concerned with all the known fields, it is inherently difficult to evaluate their impact, particularly since such inventions would be novel and would have an inventive step.[35] As a corollary, it is not reasonable to expect that information

[28] David L Booton & Carolyn R Abbot, *Using Patent Law's Teaching Function to Introduce an Environmental Ethic into the Process of Technical Innovation*, 15–16 (2008), https://works.bepress.com/david_booton/1/.
[29] Kiernan A. Murphy, *The Precautionary Principle in Patent Law: A View from Canada*, 12 THE JOURNAL OF WORLD INTELLECTUAL PROPERTY 649–689, 669 (2009).
[30] *Id.* at 669.
[31] Booton and Abbot, *supra* note 28 at 16–7.
[32] Murphy, *supra* note 29 at 650.
[33] *Id.* at 658.
[34] *Id.* at 658.
[35] *Id.* at 672.

regarding the harmful effect of an invention would be available within the time frame of the grant of a patent. As Kolitch notes, there are three stages through which scientific knowledge concerning the impact of an invention on the environment progresses.[36] The first stage refers to scientific ignorance, where the harmful impacts of an invention are "unknown and unsuspected"; the second stage refers to scientific uncertainty, where the "harmful impacts are suggested by some scientific evidence, but the scientific community has not yet reached consensus"; and the final stage refers to scientific certainty, where the "harmful impacts, if any, are well accepted by the scientific community".[37] Therefore, in light of the nature and quality of data required for the precautionary principle to operate, it is not prudent to incorporate the principle when an invention is unique and something unheard of.

*How Can the Precautionary Principle Then Be Incorporated?*

It is not that patents are granted only for inventions that are unique and ground-breaking. They are granted to all inventions which satisfy the requirements provided for in the Patent Act, 1970. Internationally, there are several conventions that have banned or regulated certain materials or constituents on the basis that they are hazardous and harmful. For e.g. the Stockholm Convention on Persistent Organic Pollutants, the Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal, the Montreal Protocol on Substances that Deplete the Ozone Layer etc. The inventions which are based on the substances that are banned under such instruments could also be banned from being patentable since there is scientific certainty that they would cause serious prejudice to the environment. This requires that the patent law be linked with other laws and policies of the government, so that inventions based on banned substances be rendered unpatentable..[38]

It is also possible that inventions could use materials that cause prejudice to the environment, but scientific uncertainty exists concerning its impact. Consider for e.g. the herbicide called glyphosate that is very commonly used for weed control. As Carvalho notes, there are several independent studies that indicate glyphosate as

[36] Kolitch, *supra* note 11 at 224.
[37] *Id.* at 224.
[38] Kolitch, *supra* note 11 at 175.

carcinogenic and having adverse effects on birds, animals, bees etc.[39] However, the chemical industry has been repeatedly vouching for its safety.[40] In fact, recently, a California Jury had ordered Monsanto to pay nearly $2 billion to a couple since they got cancer from using its product Round-Up, which has glyphosate as its main ingredient.[41] Given that certain independent scientific studies now point to its harmful effects, inventions based on glyphosate could legitimately be rendered not-patentable, by invoking the precautionary principle. It is relevant to note that several patent applications based on glyphosate are pending before the Indian Patent Office.

In order to implement such a conception of the precautionary principle, it is necessary to ensure that the initial burden placed on a person who files for opposition or revocation of a patent is not too high. This is important, since section 3(b) requires that the invention does not cause *serious* prejudice to the environment and therefore the Courts might require that the person seeking revocation or applying for opposition *substantially* proves the prejudice caused to the environment. However, as held by the Delhi High Court in Hoffmann-La Roche Ltd. v. Cipla Ltd.[42] in the context of revocation on the ground of obviousness, the initial burden of proof is on the party who alleges, "however after the party which alleges makes out a prima facie case of invalidity on the ground of obviousness, the burden shifts on the inventor to disprove obviousness".[43] A similar requirement of burden of proof would be appropriate for the purposes of section 3(b) since requiring the patent applicants to demonstrate that their inventions pose no harm to the environment would impose an almost impossible burden on them.[44]

There is another way in which this principle could be indirectly incorporated. As seen earlier, one of the main criticisms of incorporating this principle has been that it inhibits knowledge production and that for the principle to apply, we need knowledge of the effects of those inventions. Since section 83(d) requires that patents "should act as instrument to promote public interest", it is reasonable to require the patent holders

[39] Fernando P. Carvalho, *Glyphosate, the herbicide that become a nightmare and the Precautionary Principle*, INTERNATIONAL JOURNAL OF ENVIRONMENTAL STUDIES 1–12 (2020).
[40] *Id.* at 1.
[41] Sam Levin, *Monsanto must pay couple $2bn in largest verdict yet over cancer claims*, THE GUARDIAN (2019), http://www.theguardian.com/business/2019/may/13/monsanto-cancer-trial-bayer-roundup-couple (last visited Jun 18, 2021).
[42] 225 (2015) DLT 391.
[43] *Id.*, at ¶158.
[44] Henk van den Belt & Bart Gremmen, *Between Precautionary Principle and "Sound Science": Distributing the Burdens of Proof*, 15 JOURNAL OF AGRICULTURE AND ENVIRONMENTAL ETHICS 103–122, 107 (2002).

and licensees to disclose the environmental impacts of their invention as well as require patent applicants to disclose the potential environmental impact of their invention in Form No.27. Booton and Abbot argue that such requirement enhances the "environmental consciousness of the public" and helps the inventors introspect the impact of their invention on the environment.[45] They also opine that it could "stimulate ideas and the development of further advances".[46] Such information obtained every year could also help increasing the information available to the public on the impact of that invention and could nudge independent studies to verify their disclosures, if they appeared biased.

One obvious response to this proposal is that it increases the costs of compliance[47] and would not be in line with the government's push for ease of doing business. This is evident in the recent amendments to the contents of Form 27.[48] Nevertheless, the benefits of increased access to environment-related information outweigh the costs of evaluating their impact. In the long run, such disclosures disincentivise research into harmful inventions while increasing knowledge production. It could also incentivize independent studies to verify the disclosures, thereby helping reach a certain level of certainty that could trigger the invocation of the precautionary principle.

## IV. Conclusion

We have reached a stage where an attitude of business-as-usual is no longer workable. In the coming times, it is necessary that all the legislations and policies are made sensitive to the needs of the environment, so that the harmful effects of climate change are minimized. Unfortunately, while provisions that reflect concern for the environmental are enacted in Article 27(2) of the TRIPs Agreement as well as in

[45] Booton and Abbot, *supra* note 28 at 7.
[46] *Id.* at 23.
[47] *Id.* at 39.
[48] *See* Pankhuri Agarwal, *Indian Government Significantly Dilutes Patent Working Disclosure Norms*, SPICYIP , https://spicyip.com/2020/11/indian-government-significantly-dilutes-patent-working-disclosure-norms.html (last visited Jun 18, 2021).

section 3(b) of the Patent Act, 1970, there is a complete lack of jurisprudence in this regard, atleast as far as India is concerned.

I have suggested that the phrase '*serious prejudice* to the environment' attracts the well-known precautionary principle to help determine its applicability. While there have been mixed reactions to the proposal for incorporating this principle into the patent regime, I have proposed that this principle could be useful atleast in two instances. Firstly, this principle could be used to deny patents to inventions which are based on substances that are known to cause harmful effects on the environment. It could also be used to contest the grant of patents to those inventions which are based on substances that are known to cause harmful effects, but scientific uncertainty still exists. Secondly, this principle could be invoked to require additional disclosure requirements under Form 27. This would not only increase the knowledge available of the impact of such invention, but could also raise environmental awareness and therefore nudge independent studies to verify such disclosures. In the long run, it could help reach the stage of scientific certainty relatively faster.

However, the existing patent examination departments may not be equipped to evaluate the environmental impact of an invention. This requires that the existing officers be trained or a new department be established.[49] It is also possible that collaboration be made with the Ministry of Environment, Forest and Climate Change

[49] Gao, *supra* note 10 at 100–1.