THE MINAMATA CONVENTION ON MERCURY AND INDIA: A LEGAL REVIEW

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Abstract

Mercury is naturally present in the environment; however, human activities have increased the presence of mercury on land, ocean and atmosphere. Mercury is a toxic metal which is persistent (bioaccumulates and bio-magnifies) in nature and metabolizes into methyl mercury naturally which is fatal for the human environment. It can travel short and long distance depending on chemical form pollutes the human environment and can enter food chain of human population through contamination of mercury. In order to control and mitigate the global threat of mercury and protect the human environment, the international community has adopted the Minamata Convention on Mercury.

Introduction

The Minamata Convention on Mercury[1] is a milestone in an international environmental law, it is first global environmental agreement negotiated in the 21st millennium addressing mercury throughout its life cycle. This Convention is a response to the catastrophic pollution that was caused by industrial releases of methyl mercury in Minamata, Japan, causing the epidemic known as the Minamata disease in the 1950s and onwards.

Mercury is naturally present in the environment; however, human activities have increased the presence of mercury on land, ocean and atmosphere.[2] Mercury is a toxic metal which is persistent (bioaccumulates and bio-magnifies) in nature and metabolizes into methyl mercury naturally which is fatal for the human environment. It can travel short and long distance

[1] *The Minamata Convention on Mercury, 2013*, came into force on 16th August 2017
[2] Noelle E. Selin, "Global Biogeochemical Cycling of Mercury: A Review", *The Annual Review of Environment Resources*, Volume 34, 2009, Pages 43−63

depending on chemical form, and can pollute the human environment.[3] Mercury can enter food chain of human population through contamination of mercury; humans are typically exposed to the dangers of mercury (methylmercury) by consuming fish, shellfish and also through rice and other food sources.[4] Thus, in order to control and mitigate the global threat of mercury, the international community has adopted the Minamata Convention on mercury.

The Minamata Convention on Mercury, 2013

The journey of the Minamata Convention started more than a decade ago. However, before the UNEP had take up the issue to assess the health effects of mercury in 2001, the first poisoning of mercury took place in the year 1956 in Minamata[5], Japan. In 1956, a five year old girl in Minamata was found with unusual neurological symptoms with convulsions and difficulties in walking and speaking.[6] This was the first well documented case of Minamata disease, which was officially reported along with other three cases including her sister on 1st May 1956.[7] Minamata disease is caused by the poisoning of methyl mercury, this poisoning occurs when fish and shellfish which are heavily contaminated by toxic chemical are consumed daily.[8]

In the year 2001, the Governing Council[9] of the United Nations Environment Programme (herein after UNEP) invited the Executive Director of UNEP to make an assessment on mercury and its compounds (including information on chemistry and health effects, sources, long-range transport, and prevention and control technologies relating to it).[10] Thus in 2003, the Governing Council in its assessment found that there was sufficient evidence of significant global adverse impacts that mercury its compounds can cause, therefore further international action was required in order to reduce the risks to human environment from the release of mercury and its compounds to the environment.[11] The UNEP not only urged the government

[3] *Ibid*
[4] Giang et. al., "Impacts of the Minamata Convention on Mercury Emissions and Global Deposition from Coal-Fired Power Generation in Asia" *Environmental Science and Technology*, Volume 49, No. 9, 5th May 2015, Pages 5326–5335
[5] Minamata is a small town facing the Yatsushiro Sea, also called Shiranui Sea, in Kumamoto Prefecture on Kyushu Island in southern Japan where the place is abundant in fishing resources
[6] Noriyuki Hachiya, "The History and the Present of Minamata Disease- Entering the Second Half a Century", *Japan Medical Association Journal*, Volume 49 (3), 2006, Pages 112–118
[7] *Ibid*, Page 112
[8] *Ibid*
[9] The designation of the Governing Council of UNEP has been changed to the United Nations Environment Assembly on February 2013, UNEP/GC/27/17, February 2013, Decision 27/2
[10] UNEP/GC/21/9, 14th February 2001, Decision 21/5
[11] UNEP/GC/22/11, 21st February 2003, Decision 22/4

to adopt goals to reduce mercury emissions and its releases but also initiated technical assistance and capacity building activities to curb the problems cause by mercury.[12] The key reason to address the problem of mercury pollution was the global transport of mercury in the environment. Thus, a mercury programme was established and further strengthened by governments in their decisions of the Governing Council in 2005 and 2007. The 2007 decision of the Governing Council concluded that either enhanced voluntary measures will be taken by the States or work international legal instruments (new or existing) would be reviewed to assess and progress in addressing the mercury.[13] However, the 2007 decision of the Governing Council on voluntary measures was found to be insufficient. Therefore, in 2009, the Governing Council after following extensive consideration of the issue decided to take further action on mercury and prepare global legally binding instrument on mercury which is to commence in 2010 and conclude the negotiations prior to the twenty-seventh session of the Governing Council in 2013.[14] The text of the Minamata Convention on Mercury was agreed upon in 2013 and the Executive Director of the UNEP was requested to convene a Conference of Plenipotentiaries in Japan (Kumamoto and Minamata) from 9th to 11th October 2013 for adopting and opening for signature the Minamata Convention on Mercury.[15] Finally, the text of the Minamata Convention was adopted by the Conference of Plenipotentiaries on 10th October 2013, in Minamata, Japan, a symbolic location with a powerful history of an unforgettable mercury pollution catastrophe and was opened for signature for one year until 9th October 2014.[16] During this period, 127 states and one regional economic integration organization signed the Minamata Convention, bringing to total number of 128. The Minamata Convention came into force on 16th August 2017 and the first meeting of its Conference of the Parties (hereinafter COP) was held from 24th to 29th September 2017 in Geneva, Switzerland. Presently, as of June 2018, there are 192 signatory states and 92 Party members to the Minamata Convention.[17] India became a signatory state to the Minamata Convention on 30th September 2014. The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has

[12] UNEP/GC/23/11, 7th April 2005, Decision 23/9
[13] UNEP/GC/24/12, 9th February 2007, Decision 24/3
[14]UNEP/GC/25/17, 26th February 2009, Decision 25/5
[15] UNEP/GC/27/17, February 2013, Decision 27/12
[16] UNEP (DTIE)/Hg/CONF/4, Conference of Plenipotentiaries on the Minamata Convention on Mercury Kumamoto, Japan, 10 and 11 October 2013
[17]UNEP, the Minamata Convention on Mercury, Parties and Signatories, Available at http://www.mercuryconvention.org/Countries/Parties/tabid/3428/language/en-US/Default.aspx, Last visited 5th June 2018

approved the proposal for ratification of Minamata Convention on Mercury on the 7th February 2018,[18] however the Convention is yet to be ratified.

It is very interesting to note that, this Convention is probably the only international treaty that has focused on a single pollutant. The Minamata Convention has taken full-court press against mercury pollution by addressing releases and emission, setting limits on mining, identifying the point sources of pollution, regulation on import and export, control on products and processes, storage and wastes of mercury. Thus, the Convention regulates the whole life-cycle of mercury and its compounds by obligating the State Parties to control and mitigate mercury through mining, use, emissions and releases, and disposal.

This article presents a review of the Minamata Convention on Mercury and the impacts that will have in India once the Convention is ratified.

The Convention has 35 Articles and 6 Annextures. The objective of the Minamata Convention is to "protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds" Article 1.[19] The Convention is applicable to Mercury[20], Mercury compounds[21] and Mercury added-products[22] that is procured in the process of mining, manufacturing, trading, storing and waste. However, it is important to note that quantities of mercury or mercury compounds does not apply to those that is used for the laboratory-scale research (or as a reference standard), quantities of mercury or mercury compounds that occurs naturally in the products as non-mercury metals, ores, or mineral products (including coal, or products derived from these materials, and unintentional trace quantities in chemical products) and Mercury-added products.[23] Once the Minamata Convention on Mercury comes into force for India, India will have to implement certain measures in its domestic legislation.

India does not mine mercury but is heavily dependent on the import of mercury for meeting its requirements. Apart from importing elemental mercury, India also imports mercury-containing

[18]Press Information Bureau, Government of India, Ministry of Environment, Forest and Climate Change, Available at http://pib.nic.in/newsite/PrintRelease.aspx?relid=176356, Last visited 5th June 2018
[19] *Supra Note 1,* Article 1
[20] *Ibid*, Article 1 (a) "References to mercury include mixtures of mercury with other substances, including alloys of mercury, with a mercury concentration of at least 95 per cent by weight"
[21] *Ibid*, Article 1 (b) "Mercury compound means mercury (I) chloride (known also as calomel), mercury (II) oxide, mercury (II) sulphate, mercury (II) nitrate, cinnabar and mercury sulphide"
[22] *Ibid*, Article 2 (f) "Mercury-added product means a product or product component that contains mercury or a mercury compound that was intentionally added"
[23] *Ibid,* Article 3 (2) (a) (b)

instruments, mercury compounds, mercury containing batteries, etc. According to Toxics link, in the year 2012-13, India imported 165 tons of elemental mercury and exported 45 tons of elemental mercury. The mercury that is imported are used in various industries, which are mainly used in thermometers and other measuring devices, electronics, dentistry, mercury containing batteries, lighting equipment, thermostat switches, fungicides, paints, cosmetics, drugs, pharmaceutical products, traditional uses (including ayurveda and siddha medicine) and chlor-alkali industry.[24] However, it is pertinent to note that there is no comprehensive government data on the usage of mercury in India.[25] It is evident that, even though India does not mine mercury, the consumption of mercury is substantially high through import, thus leading to generation of mercury laden waste and mercury emission into environment. Besides that, India is also one of the highest polluting States in Asia, emitting mercury from coal fired thermal plants.

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Manufacture of mercury-added products

India uses imported mercury in various industries, which are mainly used in thermometers and other measuring devices, mercury containing batteries, lighting equipment, thermostat etc. Thereby making the healthcare sector a key source of mercury's global demand and emissions, the main consumers of mercury in the health care sector are health care instruments and dental restorations.[26] According to Toxics Link, in the year 2012 around 80% of the domestic clinical thermometers which is used in India is locally manufactured and 20% is imported per annum (total 10.4 million units, where 8.32 million units are locally manufactured and 2.08 million units imported).[27] Thus, if the Convention is ratified then India will have to take measures and should not allow manufacture of mercury-added products after 2020 i.e., thermometer, unless it decides to take an exemption from phasing out.

India must take appropriate measures and should not allow manufacture of mercury-added products listed in Part I of Annex A, after the year 2020.[28] They are Batteries, Switches and Relays, Compact fluorescent lamps (CFLs), Linear fluorescent lamps (LFLs), High pressure

[24] *"Technical Background Report to the Global Atmospheric Mercury Assessment*", AMAP and UNEP, 2008
[25] *Ibid*
[26] "*Mercury in Our Mouth- An Estimation of Mercury Usage and Release from the Dental Sector in India*", Toxics Link, 2012
[27] "*Mercury Free India - Right Choices*", A Study by Toxics Link, Toxics Link, 2014
[28] *Supra Note 1*, Article 4 (1), Also *see* Annex A of the Convention

mercury vapour lamps (HPMV), Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for electronic displays, Cosmetics, Pesticides, biocides and topical antiseptics and non-electronic measuring devices (barometers, hygrometers, manometers, thermometers and sphygmomanometers).[29] For example, mercury-added product such as Batteries will not be allowed for manufacture after the year 2020 (except for button zinc silver oxide batteries with a mercury content < 2% and button zinc air batteries with a mercury content < 2%).[30] It is also important to note that the Annex A[31] also lists out some mercury-added products which are excluded from the phase out. For example mercury-added products that is essential for civil protection and military uses, vaccines containing thiomersal as preservatives etc. are excluded from such phasing out.

However, State Parties can register for an exemption under Article 6 of the Minamata Convention, and then this phasing out of mercury-added products by the year 2020 will not apply to it.[32] Thus, if India registers for an exemption, then it must indicate for an alternative that it will implement different measures or strategies to address such products.[33] However, India can choose this alternative only if it can demonstrate that it has already reduced to *de minimis*[34] level (through manufacture, import, and export) of the large majority of the products that have been listed in Part I of Annex A.[35] Furthermore, India must have to show that it has implemented measures or strategies to reduce the use of mercury in additional products (products that are not listed in Part I of Annex A) when notifying the Secretariat of its decision to use this alternative measure.[36]

Measures to take for mercury-added products

Part II of Annex A (mercury-added products subject to restrictions) has only listed "Dental amalgam" specifying nine measures that parties wanting to limit its use can take. However, the Convention also makes it clear that any Party willing to take such measures to phase down the

[29] *Ibid*, Annex A (Part I)
[30] *Ibid*, Annex A (Part I: Products subject to Article 4, paragraph 1)
[31] *Ibid*
[32] *Ibid*, Article 4 (1)
[33] *Ibid*, Article 4 (2)
[34] Definition of *de minimis*, lacking significance or importance, so minor as to merit disregard, Merriam-Webster Dictionary, Available at https://www.merriam-webster.com/dictionary/de%20minimis, Last visited 5th June 2018
[35] *Supra Note 1*, Article 4 (2)
[36] *Ibid*, Article 4 (2)

use of dental amalgam should take its domestic circumstances into account and also relevant international guidance.[37] Consequently, in phasing down such use of dental amalgam, the concerned Party State should include two or more of the measures from the list that has been provided in Part II of Annex A.[38]

India generates a total quantity of approximately 65 tons per annum of contact amalgam and non-contact amalgam[39] of mercury from dentistry practices. Out of these, 49 tons is the dental filling and 16.2 tons is non-contact amalgam which is thrown into bins or goes to the sewer or is emitted into the air during the procedure of dental restoration.[40]

Thus, if India chooses to take measure in phasing down the use of dental amalgam, then India should include in its measures, national objectives aiming at dental caries prevention and health promotion (to minimize the need for dental restoration), national objectives to minimise its use and promote the use of cost-effective and clinically effective mercury-free alternatives for dental restoration etc.[41]

Manufacturing processes where mercury or mercury compounds are used

The Convention has laid out specific provisions regarding this issue under Article 5 and under Annex B of the Convention. Under part I of Annex B, manufacturing processes using mercury or mercury compounds where *Chlor-alkali* and *Acetaldehyd*e are produced must be phased out by all Parties by the year 2025 and 2018 respectively.[42]

Chlor-alkali process is used for producing caustic soda and chlorine all over the world, where three types of technologies are prevalent, one is mercury cell technology process.[43] In mercury cell technology process, the mercury cell cathode comprises of a slowly flowing layer of mercury across the cell bottom.[44] "Sodium ions at the cathode are converted into sodium, which forms an amalgam with the mercury at the cathode there by using large quantities of

[37] *Ibid*, Annex A (Part II)
[38] *Ibid*
[39] Contact amalgam- generated during the removal of old fillings or polishing of new ones. Non-contact amalgam- the amalgam which has been prepared but never gets filled
[40] *Supra Note* 26
[41] *Supra Note 1*, Annex A (Part II)
[42] *Ibid*, Part I of Annex B
[43] *Supra Note 27*
[44] *Ibid*

mercury."[45] India is not new to Chlor-alkali plants, it dates back to 1959, however in 2003 with the adoption of the Charter on Corporate Responsibility for Environmental Protection (CREP) and after an understanding between the government of India and the industry, the plants started shifting to "membrane cell technology"[46]. According to Toxics Link there are only two plants which are operating partly on the mercury cell technology with a total capacity of 14,800 tons/year of caustic soda (on average Total mercury usage per annum is 2960000gm/year).[47] This provision will be applicable to India as well once the Convention is ratified. Thus, as according to the Convention, India must phase out manufacturing processes using mercury or mercury compounds where *Chlor-alkali* is produced by the year 2025.

Under part II of Annex B, the Convention provides that each Party member should take measures to restrict the use of mercury or mercury compounds in the processes of production of *Vinyl chloride monomer, Sodium or Potassium Methylate or Ethylate* and *polyurethane* (using mercury containing catalysts).[48] For example, to manufacture "Vinyl chloride monomer", mercury is used in the process of its production, thus the Parties will have to take certain measure i.e., reduce use of mercury per unit production by 50 per cent by the year 2020 against 2010 use, promote measures to reduce the reliance on mercury from primary mining etc. during such manufacturing process.[49]

Additionally, no Party should allow the use of mercury or mercury compounds in a facility that did not exist before 2017 for manufacturing processes listed in Annex B and therefore no exemptions will be given to such facilities.[50] Also, each Party should discourage the development of any facility using any other manufacturing process in which mercury or mercury compounds are intentionally used that did not exist prior to 2017.[51] However, an exception will be granted if a Party can show the COP that the manufacturing process provides

[45] *Ibid*
[46] Membrane Cell Technology- "The membrane cell plant is an environment friendly and energy efficient technology. Thus, any end product from this plant is mercury free with no chances of mercury contamination to the soil or water. The membrane cell-based plant ensures no emission of mercury into the air and no negative impacts on human health as well as the environment remains" (Source- *Mercury Free India - Right Choices*, A Study by Toxics Link, Toxics Link, 2014)
[47] *Supra Note 27*
[48] *Supra Note 1*, Article 5 (3)
[49] *Ibid*, Annex B, Part II: Processes subject to Article 5, paragraph 3
[50] *Ibid*, Article 5 (6)
[51] *Ibid*, Article 5 (7)

significant environmental and health benefits and there are no technically and economically feasible mercury-free alternatives that is available providing such benefits.[52]

Export and Import of mercury

Prior to Minamata Convention, there was no international law or frameworks that regulated the export and import of mercury. However, the Minamata Convention has changed this status. India does not mine mercury thus it is heavily dependent on the import of mercury to meet the demand of its domestic use. In the year 2012-13, India imported 165 tons of elemental mercury and exported 45 tons of elemental mercury.[53]

In general, the Convention allows the Parties to export and import mercury but it is not allowed to the non-State Parties. However, export and import to non-State Parties may be allowed only if the non-Party State provides its written consent.[54] This written consent will include certification showing that the non-Party has taken measures to protect human health and the environment and has also ensured its compliance with the provisions of Articles 10 and 11 and such mercury will be used only for a use allowed to a Party under this Convention or for environmentally sound interim storage as set out in Article 10.[55] Thus, an exporting or the importing Party may rely on the general notification that is supplied by the non-Party to the Secretariat (this notification to the Secretariat is a written consent that is provided to the exporting Party by the non-Party for export of mercury).[56] This general notification shall set out terms and conditions under which the Party or non-Party provides its consent.[57] Furthermore, this notification may be revoked at any time by that Party or non-Party, for which the Secretariat shall keep a public register of all such notifications.[58]

Furthermore, all Parties must take appropriate measures and should not allow import or export of mercury-added products listed in Part I of Annex A after the year 2020.[59] For example, mercury-added product such as Batteries will not be allowed for import or export after the year

[52] *Ibid*, Article 5 (7)
[53] Directorate General of Foreign Trade, Ministry of Commerce, Import Export Data
[54] *Supra Note 1*, Article 3 (6) (b)
[55] *Ibid*, Article 3 (6) (b) (i) (ii)
[56] *Ibid*, Article 3 (7)
[57] *Ibid*, Article 3 (7)
[58] *Ibid*, Article 3 (7)
[59] *Ibid*, Article 4 (1), Also *see* Annex A of the Convention

2020 (except for button zinc silver oxide batteries with a mercury content < 2% and button zinc air batteries with a mercury content < 2%).[60] Also, mercury-added product such as High pressure mercury vapour lamps (HPMV) for general lighting purposes will not be allowed for import or export after the year 2020.[61]

However, State Parties can register for an exemption under Article 6 of the Minamata Convention, and then this phasing out of mercury-added products by the year 2020 will not apply to it.[62] Thus, if India registers for an exemption, then it must indicate for an alternative that it will implement different measures or strategies to address such products.[63] However, India can choose this alternative only if it can demonstrate that it has already reduced to *de minimis*[64] level (through manufacture, import, and export) of the large majority of the products that have been listed in Part I of Annex A.[65] Furthermore, India must have to show that it has implemented measures or strategies to reduce the use of mercury in additional products (products that are not listed in Part I of Annex A) when notifying the Secretariat of its decision to use this alternative measure.[66]

The Convention has a strict reporting requirement which will help nations and secretariat to track mercury movement across the world under Article 3 (9). Thus, if a Party submits a general notification of consent to the Secretariat (setting out terms and conditions under which the Party provides its consent under Article 3 (7)), then the Party will not be required to provide a certificate the mercury is not from sources identified as not allowed under Article 3 paragraph 3 or paragraph 5 (b).[67] However, the Party will have to maintain comprehensive restrictions on the export of mercury and that its domestic measures are in place to ensure that imported mercury is managed in an environmentally sound manner.[68] The said notification should be send to the Secretariat by the Party about their decision, where the notification includes information on its export restrictions, domestic regulatory measures and quantities and

[60] *Ibid*, Annex A (Part I: Products subject to Article 4, paragraph 1)
[61] *Ibid*
[62] *Ibid*, Article 4 (1)
[63] *Ibid*, Article 4 (2)
[64] Definition of *de minimis*, lacking significance or importance, so minor as to merit disregard, Merriam-Webster Dictionary, Available at https://www.merriam-webster.com/dictionary/de%20minimis, Last visited 5th June 2018
[65] *Supra Note 1*, Article 4 (2)
[66] *Ibid*, Article 4 (2)
[67] *Ibid*, Article 3 (9)
[68] *Ibid*, Article 3 (9)

countries of origin of mercury imported from non-Parties.[69] Thereby, the Secretariat shall keep a public register of all such notifications and the Implementation and Compliance Committee shall review and evaluate such notifications and support information according to Article 15 and may make recommendations, as appropriate, to the Conference of the Parties.[70] Accordingly, India will be required to regulate and control its import and export and thereby prevent it from becoming a source of trading. Thus, this notification will also be helpful in receiving and recording data on mercury usage by various sectors and keeping track of any spillage if any and releases of mercury into the environment.

Mercury Wastes

The Convention addresses the transboundary movement of mercury wastes (containing or contaminated with or consisting of mercury or mercury compounds) under Article 11 of the Convention. India being a Party to the Basel Convention[71], India must take appropriate measures so that mercury waste is not transported across international boundaries except for the purpose of environmentally sound disposal and which is in conformity with Article 11 and with the Basel Convention.[72]

Additionally, the Parties to the Minamata Convention are encouraged to cooperate with each other (with relevant intergovernmental organizations and other entities as well as appropriate) to develop and maintain global, regional and national capacity for the management of mercury wastes in an environmentally sound manner.[73]

More importantly, the Minamata Convention has addressed mercury wastes through prevention and treatment of mercury waste that are emitted or released in the environment through 5 point sources. The Convention has addressed mercury emission, releases and wastes under Articles 8, 9 and 11 respectively.

Emission of mercury and mercury compounds

[69] *Ibid*, Article 3 (9)
[70] *Ibid*, Article 3 (9)
[71] *The Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989*
[72] *Supra Note 1*, Article 11 (3) (c)
[73] *Ibid*, Article 11 (5)

Under Article 8 of the Minamata Convention, the Parties are required to control its emission and where feasible reduce such emissions to the atmosphere from point sources. The Convention has identified five point sources such as *Coal-fired power plants, Coal-fired industrial boiler, Smelting and roasting processes* used in the production of non-ferrous metals (for the purpose of this Annex, "non-ferrous metals" refers to lead, zinc, copper and industrial gold), *Waste incineration facilities* and *Cement clinker production facilities.*[74]

According to UNEP, the main industrial sources of atmospheric mercury pollution are caused by coal burning, mining, industrial activities that process ores to produce various metals or process other raw materials to produce cement.[75] Globally, coal combustion is estimated to be the second largest source of anthropogenic mercury emissions to air (24% of emissions in 2010), where Asia is the largest contributor to global emissions, and these emissions are expected to increase with continued economic growth.[76] After China[77], India is estimated to be the second largest contributor of mercury pollution from coal combustion with 7% of global emissions. Moreover, India is planning to add 160 GW of additional capacity by 2022, where coal-fired power plants will be a large part of this expansion.[78] In India, the estimation of total mercury emission from anthropogenic sources is approximately 161.05 tons per annum, where coal fired thermal power plant being the major contributor with 140 ton per annum.[79] Apart from mercury pollution from coal combustion, India also emits mercury to the atmosphere which is contributed from non-ferrous metal production, cement production, pig iron & crude steel production, incineration of mercury containing waste.[80]

Accordingly, if India becomes a Party to the Convention then India must take measures to control emissions from any of the identified five sources. Since, India emits mercury from the sources that been identified by the Convention and India being one of the highest polluter of mercury from coal combustion with 7% of global emissions, will have to take measures to control its emission. Thus, India will have to prepare a National Plan setting out measures to

[74] *Ibid*, Annex D
[75] Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport, United Nations Environment Programme, Geneva, Switzerland, 2013
[76] *Ibid*
[77] 29% of global emissions of mercury emission from coal combustion (*Source*- Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport, United Nations Environment Programme, Geneva, Switzerland, 2013)
[78] *Supra Note 4*
[79] *Supra Note 27*
[80] *Ibid*

be taken to control emissions and expected targets, goals and outcomes.[81] Such National Plan must be submitted to the COP within four years of the date where the Convention enters into force for India.[82] Furthermore, if India develops Implementation Plan, then the said Implementation Plan should be included in the National Plan.[83] In preparing Implementation Plan, India should follow initial assessment, then develop and execute an Implementation Plan.[84] While making Implementation Plan, India must also take domestic circumstances into account and consult national stakeholders to facilitate the development and such plan must be transmitted to the Secretariat as soon as it is developed.[85] Moreover, India may review and update its Implementation Plan and in doing so, it must take domestic circumstances into account, consult national stakeholders and also refer to guidance from the COP (and other relevant guidance).[86] Furthermore, India may also coordinate on regional plans to facilitate implementation of this Convention.[87] Furthermore, India must establish (as soon as practicable) an inventory[88] of emissions and maintain such inventory from the sources as identified by the Convention but not later than five years after the Convention comes into force for India.[89]

However, with India's economic ambition and without any cap measures or phasing out for pollution of mercury from the identified five point sources, this Convention may not serve any possible reduction of mercury for India. Furthermore, as asserted by the Convention on the Implementation Plan under Article 20 of the Minamata Convention, this Implementation Plan is not mandatory, though it is fundamental and critical for governments and overall impacts of such plan can be substantial.

The Convention has also laid out five measures, where the Party State can choose any one or more measures and must include in its National Plan as soon as practicable but not more than

[81] *Supra Note 1*, Article 8 (3)
[82] *Ibid*, Article 8 (3)
[83] *Ibid*, Article 8 (3)
[84] *Ibid*, Article 20 (1), Article 20 (3)
[85] *Ibid*, Article 20 (1)
[86] *Ibid*, Article 20 (2), Article 20 (3)
[87] *Ibid*, Article 20 (4)
[88] COP1 of the Minamata Convention on Mercury adopted "Guidance on the methodology for preparing inventories of emissions pursuant to Article 8 of the Minamata Convention on Mercury", which was held from 24th to 29th September 2017, at the International Conference Centre in Geneva), Also available at http://www.mercuryconvention.org/Portals/11/documents/forms%20and%20guidance/English/guidance_Article8_inventory.pdf, Last visited 6th June 2018
[89] *Supra Note1*, Article 8 (7)

ten years after the Convention comes into force for it.[90] Thus, India on becoming a Party to the Convention must implement such measures. However, for implementing any one or more measures in its National Plan, India must take account of its national circumstances, and the economic and technical feasibility and affordability.[91] The five measures are quantified goal, emission limit values, use best available techniques (BAT) and best environmental practices (BEP), multi-pollutant control strategy that would deliver co-benefits for control of mercury emissions and alternative measures to reduce emissions from any of the five identified sources.[92] Furthermore, the objective for such measures is to achieve reasonable progress in reducing emissions over time, thus it is up to India to choose, either to apply same measures or adopt different measures to the five identified sources [93]

Furthermore, if India makes construction or substantial modification (that results in significant increase in emissions, excluding any change in emissions resulting from by-product recovery) of any of the five sources, then it is required to the use BAT and BEP to control and where feasible reduce such emissions as soon as practicable but not later than five years after the Convention comes into force for India.[94] Such construction or substantial modification which has commenced at least one year after this Convention comes into force for the Party concerned or when the amendment to Annex D comes into force where the source becomes subject to the provisions of this Convention (only by virtue of that amendment).[95]

Releases of mercury and mercury compounds

Releases of mercury and mercury compounds has been addressed under Article 9, by controlling its releases and where feasible reduce such releases to land and water from the point sources that has been identified by the Party State from any significant anthropogenic point source but not from the five point sources that has been identified by the Convention under Annex D.[96] Accordingly, on becoming a Party, India shall identify the point source of mercury or mercury compounds that is released to land or water not later than three years after the Convention comes into force for it and thereafter identify the point sources categories on a

[90] *Ibid*, Article 8 (5)
[91] *Ibid*, Article 8 (5)
[92] *Ibid*, Article 8 (5) (a) (b) (c) (d) (e)
[93] *Ibid*, Article 8 (6)
[94] *Ibid*, Article 8 (4)
[95] *Ibid*, Article 8 (2) (d)
[96] *Ibid*, Article 9 (1), 2 (b), Also see Annex D

regular basic.[97] Thus, after identifying the point sources, it shall take measures to control releases of mercury or mercury compounds and may prepare a National Plan setting out measures to be taken to control releases and expected targets, goals and outcomes.[98] Such plan should be submitted to the COP within four years from the date the Convention comes into force for that Party.[99] Also, if the Party develops an Implementation Plan according to Article 20, then the said Implementation Plan should be included in the National Plan.[100] The procedure for the Implementation Plan is same as the Implementation Plan that is followed by the Parties where the five point sources have already been identified by the Convention.

Contaminated sites

In India, the frequency of mercury contamination is expected to be common because of the uncontrolled use of elemental mercury/mercury compounds by various sectors. Contamination of mercury is reported to be widespread in India, places such as industrial emissions of mercury from coal combustion, iron and steel industry, non-ferrous metallurgical plants, chloralkali plants, cement industry, waste disposal and other minor sources (i.e. brick manufacturing, instruments, clinical thermometers).[101]

One of such contaminate site was reported in Kodaikanal, a former thermometer factory which had closed down in 2001. The contaminated site is located on a notified industrial site, which is "approximately 85,000 m and on top of a cliff at an elevation of approximately 2,180 m above sea level".[102] There were reports of mercury laden waste and sludge which was being disposed off down the hill slopes, contaminating large area around the plant. However, according to the report of the MOEFCC, most of the mercury contaminated equipment and soil has been removed from the site.[103]

The provision addressing the contaminated sites is laid under Article 12 of the Convention. Accordingly, "each Party shall endeavor to develop appropriate strategies for identifying and

[97] *Ibid*, Article 9 (3)
[98] *Ibid*, Article 9 (4)
[99] *Ibid*, Article 9 (4)
[100] *Ibid*, Article 9 (4)
[101] Dr. M.N.V. Prasad, A State-of-the-Art report on Bioremediation, its Applications to Contaminated Sites in India, MOEFCC, Government of India, March 2011
[102] *Ibid*
[103] *Ibid*

assessing sites contaminated by mercury or mercury compounds"[104]. Thus, on ratifying the Convention, India when taking actions to reduce the risk posed by contaminated sites must execute the work in an environmentally sound manner incorporating assessment (wherever appropriate) of the risks to human health and the environment from the mercury or mercury compounds.[105]

Individual stocks of mercury or mercury compounds

Regarding the individual stocks of mercury or mercury compounds, the Convention endeavours each Party States to identify individual stocks of mercury or mercury compounds which exceeds 50 metric tons and sources of mercury supply generating stocks which exceeds 10 metric tons per year that are located within its territory.[106] Thus, India should take measures when they find out that excess mercury from the decommissioning of chlor-alkali facilities is available, thus such mercury should be disposed of according to the guidelines for environmentally sound management as laid out paragraph 3 (a) of Article 11, by using operations as such that that it should not lead to recovery, recycling, reclamation, direct re-use or alternative uses.[107]

Interim storage of mercury and mercury compounds other than wastes mercury

This interim storage refers to mercury and mercury compounds that are being stored for further use but not mercury wastes.[108] Thus, the Party States should take measures and ensure that the interim storage of mercury and mercury compounds is intended for use that has been allowed by the Convention which is undertaken in an environmentally sound manner, taking into account the guidelines that has been adopted by the COP.[109] The said guidelines shall be adopted by the COP on the environmentally sound interim storage of such mercury and mercury compounds, taking into account any relevant guidelines developed under the Basel Convention (and other relevant guidance).[110] The COP shall also adopt requirements according to Article 27 of the Convention (adoption and amendments of annexes will be discussed in

[104] *Supra Note 1,* Article 12 (1)
[105] *Ibid*, Article 12 (2)
[106] *Ibid*, Article 3 (5) (a)
[107] *Ibid*, Article 3 (5) (b)
[108] *Ibid*, Article 10 (1)
[109] *Ibid*, Article 10 (2)
[110] *Ibid*, Article 10 (3)

detail in the later part).[111] However, the said guidelines have not been adopted yet by the COP. Furthermore, the Parties shall cooperate with each other and with relevant intergovernmental organizations (including other entities) to boost capacity-building for the interim storage of such mercury and mercury compounds in an environmentally sound manner.[112]

Conclusion

With India's economic ambition and without any cap measures or phasing out for pollution of mercury from the identified five point sources (Under Annex D), this Convention may not serve any possible reduction of mercury for India especially from the coal fired thermal plants sector. Also, the Implementation Plan (under Article 20) of the Minamata Convention which is truly fundamental and critical for governments and overall impacts of mercury, however this Implementation Plan is not mandatory, thus the Parties can choose not to execute such vital implementations.

The Convention has a strict reporting requirement which will help nations and secretariat to track mercury movement across the world under Article 3 (9). The Party will have to maintain comprehensive restrictions on the export of mercury and that its domestic measures are in place to ensure that imported mercury is managed in an environmentally sound manner. Hence, India will be required to regulate and control its import and export and thereby prevent it from becoming a source of trading. This notification (reporting) will also be helpful in receiving and recording data on mercury usage by various sectors and keeping track of any spillage if any and releases of mercury into the environment.

Regarding the Dental amalgam, India generates a total quantity of approximately 65 tons per annum of amalgam of mercury from dentistry practices. The Convention makes it clear that any Party willing to take such measures to phase down the use of dental amalgam should take its domestic circumstances into account and also relevant international guidance (Annex Part II of A). However, these measures are also left upon the discretion of the States. Therefore, if India chooses to take measure in phasing down the use of dental amalgam, then India should include in its measures, national objectives aiming at dental caries prevention and health promotion (to minimize the need for dental restoration), national objectives to minimise its use

[111] *Ibid*, Article 10 (3)
[112] *Ibid*, Article 10 (4)

and promote the use of cost-effective and clinically effective mercury-free alternatives for dental restoration etc.

Furthermore, it will enhance the existing legislation that is currently in India to a large extent. *The Environment (Protection) Act, 1986* and *the Environment (Protection) Rules, 1986* was brought about as a realization of inadequacy of the existing law. The Environment (Protection) Act, 1986 is an umbrella legislation which comprehensively deals with environmental problems and the Environment (Protection) Rules lay down procedures for setting standards of emission or discharge of environmental pollutants. Accordingly, the Act gives power to the Central Government to make rules on various subject matters including the procedures and safeguards for handling of hazardous substances and the prohibition and restriction on the handling of hazardous substances in different areas (Section 6). In this manner, in the exercise of the powers vested upon the central Government by the Act as seen in Sections 6, 8 and 25, the Central Government passed important Rules to deal and manage hazardous substances and wastes.

It is pertinent to note that there is no specific legislation that particularly addresses mercury or mercury wastes, however, the regulations and rules that address the management of hazardous substances will apply to mercury. The main and the primary regulation that address the management of hazardous substances in India is *the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989* and the chief regulator in the managing hazardous waste in India is *the Hazardous and Other Wastes (Management and Transboundary Movement) Rules,* 2016, thus these rules applies to mercury as well. There are also various other Rules that address hazardous substances and wastes and which may address mercury which include, *the Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996*, *the Batteries (Management and Handling) Rules, 200*1, *the E-Waste (Management) Rules, 2016, the Bio-Medical Waste Management Rules, 2016,* and *the Regulation on Persistent Organic Pollutants Rules, 2018*. Furthermore, there are also some other Rules though they do not directly address hazardous substances and wastes but owning to the fact that these Rules fall within the ambit of the definition of hazardous waste by *the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.*