

## **ZMWG contribution in relation to Article 14 of the Minamata Convention, on capacity building, technical assistance and technology transfer**

**June 2019**

Following decision MC 2/11 and in response to the Secretariat's request under Article 14, addressing the matters of capacity building, technical assistance and technology transfer, the Zero Mercury Working Group is pleased to provide the following contributions based on some of its most recent projects and work:

**1. [A toolbox towards phasing out mercury added products](#)<sup>1</sup> can be found on our website.**

It includes tools which governments and NGOs could use to develop a national roadmap towards phasing out mercury added products as per Art. 4 of the Minamata Convention, including:

- [Guide and Checklist for Phasing out Mercury added Products under the Minamata Convention, FR, ES](#), December 2017,
- Questionnaires that could be used in view of assessing the national market transition towards Convention compliant products, as well as
- An example of a study on the national market transition towards Convention compliant products.

**2. *"Contributing towards early ratification and implementation of the Minamata Convention on Mercury and towards phasing out mercury added products."***

In 2017, five projects<sup>2</sup> started in Kenya (CEJAD), and Ivory Coast (CASE) as well as in Bangladesh (ESDO), the Philippines (BanToxics!) and India (Toxics Link), under the title of: "Contributing towards early ratification and implementation of the Minamata Convention on Mercury and towards phasing out mercury added products." Building on the outcomes of the above-mentioned project, these projects include fully or partly the following activities:

- Development and eventually assisting with the implementation of the checklist/roadmap to phase-out mercury added products with relevant government ministries.
- The development of study of availability of alternatives to mercury-added product of the country.

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<sup>1</sup> <http://www.zeromercury.org/about-mercury/mercury-in-products/>

<sup>2</sup> The projects are funded by the Swedish International Development Agency (SIDA), via the Swedish Society for Nature Conservation (SSNC), through the European Environmental Bureau.,

- Development/contribution on the legal gap analysis focusing on Article 4 provisions of the Treaty.
- Assisting hospitals to go mercury free with focus on phase out of thermometers and sphygmomanometers, in collaboration with the Ministry of Health.
- Sensitization of border inspectors from relevant government agencies and media on Minamata Convention/phase out provisions and illegal mercury containing products.
- Contribute to the global skin lightening product campaign
- Contribute to the MIA work

### **3. Relevant input developed on dental amalgam**

Under Article 4, paragraph 3 of the Minamata Convention on Mercury, each Party is required to take measures to phase down the use of dental amalgam in accordance with the provisions set forth in Part II of Annex A. Among other issues, concerns were expressed during the negotiations about the global availability, efficacy and cost of mercury-free dental restorative materials when compared with dental amalgam.

As summarized below, mercury-free fillings are widely available<sup>i</sup>, safer for the environment<sup>ii</sup>, preserve more tooth structure<sup>iii</sup>, and are easier to repair- all resulting in less costs.<sup>iv</sup> On the other hand, amalgam often result in weakened tooth structure<sup>v</sup> and more challenging repairs,<sup>vi</sup> environmental pollution,<sup>vii</sup> and methylmercury exposure<sup>viii</sup> – all factors contributing to higher costs. Since material costs are about the same<sup>ix</sup> and trained dentists can place composite as fast as amalgam,<sup>x</sup> the costs for placement of amalgam and composites are similar.

#### Global availability of mercury-free dental restorative materials

Since 2013, the global availability of mercury-free dental restorative materials has continued to increase, along with improvements in performance and efficacy. There are a number of techniques and materials utilized in many countries that have either phased down or phased out dental amalgam. Alternatives to amalgam include composite resins, glass ionomer cements, compomers, giomers, and dental porcelain.<sup>xi</sup> Composites are most commonly used and studies show their efficacy in replacing amalgam in virtually every type of clinical situation.<sup>xii</sup>

A 2016 UNEP report presented information from country submittals. Several reported a virtual phase-out of amalgam use (quantities in kilograms) in dentistry, per the below table.<sup>xiii</sup>

<b>Country</b>	<b>1980-89</b>	<b>1990-99</b>	<b>2000-09</b>	<b>2010-2011</b>	<b>Future</b>
Japan	4,189	1,189	503	minimal	minimal
Switzerland	1,700	1,400	260	<80	zero
Denmark	n.a.	9,094	4,221	78	minimal
Norway	n.a.	894	128	zero	zero
Finland	n.a.	n.a.	n.a.	est. 150	zero

In Japan, dental amalgam was used in around 11% of dental restorations in the 1980s, and fewer than 4% in the 1990s, according to the UNEP report. Since January 2008, there has been a ban on amalgam in Norway, resulting in near zero use. In Sweden, amalgam use effectively ended in 2010. Denmark has introduced a “phasing-down” practice for amalgam, resulting in less than 5% use.

Other countries – including Switzerland, Italy, Estonia, Cyprus, Latvia, Malta and the Netherlands – have reduced amalgam use to under 10%.<sup>xiv</sup> Amalgam use in Switzerland dropped from 47% in the 1990s, to less than 10% in 2010, with the future target to eliminate. In 2012, Hungary’s amalgam use was approximately 12%, and use in Singapore was around 16%. Amalgam use is less than 20% in Mongolia and Vietnam.<sup>xv</sup>

#### Other policies and/or measures in place to phase out the use of dental amalgam

- **European Union:** The European Union has banned amalgam use for children under age 15, pregnant women, and breastfeeding mothers.<sup>xvi</sup> National plans of action are developed by EU Member States on how they will phase down/out amalgam use and will be publicly available. The European Environmental Bureau, the World Alliance for Mercury Free Dentistry, and the European Centre for Environmental Medicine [\*proposed elements to be considered as Member States prepare their national plans towards phasing down/out dental amalgam.\*](#)
- **Hungary:** In Hungary, the 2008 national inspectorate of dentists’ recommendation on dental restoration materials advises against using dental amalgam in new dental restorations.<sup>xvii</sup>
- **Netherlands:** In the Netherlands a major shift away from amalgam took place in the 1990s. As a result, the average use of amalgam in the 2000s was around 7% of all dental restorative fillings, dropping to less than 1% by 2011.<sup>xviii</sup>
- **Mongolia:** Mongolia has taken steps to limit procurement of amalgam, effectively phasing down its use.<sup>xix</sup>
- **Bangladesh:** The Bangladesh army has limited amalgam procurement, effectively phasing down its use. The Bangladesh Army ended new procurement of amalgam in January 2018, a decision that circulated to all forces – about 1.5 million persons under treatment.<sup>xx</sup>
- **Mauritius:** A decade ago, the Ministry of Health phased out amalgam use in pregnant women and children under 10. Since then, there has been a significant reduction in the percentage of children receiving amalgam, and a reduction for adults too.<sup>xxi</sup>
- **Vietnam:** The Health Service Administration Department recently requested that amalgam use be discontinued in children under 15 and in pregnant and lactating women by April 1, 2019, and that a roadmap be developed for discontinuing amalgam use after 2020.<sup>xxii</sup>
- **Nigeria:** In its Minamata Initial Assessment, Nigeria prioritized “setting national guidelines aiming at minimizing the use of dental amalgam, particularly in the care of children’s primary teeth and of pregnant women.”<sup>xxiii</sup>

#### Advantages of mercury-free dental restorative alternatives to dental amalgam

A considerable body of evidence now indicates mercury-free dental fillings offer advantages that make them more effective than dental amalgam. For example:

- **Environment-friendly:** The alternatives to amalgam are mercury-free, and there is no evidence of environmental toxicity.<sup>xxiv</sup>

- **Preserve the tooth structure:** Amalgam often requires the removal of more tooth tissue, leading to additional and more expensive repairs over time.<sup>xxv</sup> The WHO states that *“Adhesive resin materials [like composite] allow for less tooth destruction and, as a result, a longer survival of the tooth itself.”*<sup>xxvi</sup> In addition, composites can strengthen and enhance the biomechanical properties of the restored tooth due to their binding properties.<sup>xxvii</sup>
- **Prevent caries:** Glass ionomers release fluoride, which is widely considered to help prevent tooth decay.<sup>xxviii</sup> Composite placement can also incorporate preventive measures, including sealing of adjacent pits and tooth fissures.<sup>xxix</sup>
- **Easier repairs:** Composites permit localized repairs and are often repaired more successfully than amalgam, with Opdam *et. al.* explaining that *“The annual failure rate (AFR) after 4 years for repairs of amalgam restorations was 9.3%, while the AFR of repaired composite restorations was 5.7%.”*<sup>xxx</sup>
- **More accessible:** Glass ionomers, though less durable than composites or amalgam, have proven invaluable in more challenging clinical situations (e.g., treating children’s milk teeth in communities with no electricity), and they can be less expensive than amalgam.<sup>xxxi</sup>
- **Efficient to place:** Because mercury-free dental fillings have been developed and studied for more than fifty years,<sup>xxxii</sup> dentists in many areas around the world are now routinely trained and equipped to use alternative materials. Dental schools have assisted as well.
- **Durability:** Mercury-free alternatives are at least as durable. According to the 2012 BIOIS report, *“...the longevity of Hg-free fillings is no longer a factor with significant effect on the overall cost difference between dental amalgam and composite or glass ionomers.”*<sup>xxxiii</sup>

#### 4. ZMWG Skin-lightening cream campaign

The EEB, in collaboration with ZMWG, and funding from the Swedish Society for Nature Conservation (SSNC) started a global NGO campaign. The focus of the campaign is in support of national government efforts to ban the manufacture, import, export and use of mercury-added cosmetics (with mercury content of 1 part per million.) This effort is in line with the Minamata Convention provisions in general support of listed product bans. The campaign started in 2017 and will be continuing until 2020.

In the framework of the project, a ZMWG skin-lightening cream working group has been formed.

The toxic trade of often illegal mercury-added skin-lightening products is a global crisis expected to only worsen with skyrocketing demand, especially in Asia, the Middle East and Africa.<sup>i</sup> Consistent with other research, the new Zero Mercury Working Group (ZMWG) study indicates that a significant percentage of skin-lightening creams sold worldwide contain dangerous levels of mercury.

In 2017 and 2018, 338 skin-lightening creams from 22 countries were collected by seventeen of our non-governmental organization (NGO) partners from around the world and tested for mercury. 34 creams (10% of the samples) had mercury concentrations ranging from 93 - 16,353 parts per million (ppm). These levels significantly exceeded not only the legal standard established by countries that regulate these products, but also the provisions set forth in the Minamata Convention disallowing after 2020 the “manufacture, import or export” of cosmetics with a mercury content above 1 ppm.

**REPORT - [Mercury-Added Skin-Lightening Creams: Available, inexpensive and toxic](#)  
Executive Summary - [EN](#), [FR](#), [ES](#)**

[See furthermore, a list of creams found to contain more than 1 ppm of mercury](#)

In a separate exercise, the Mercury Policy Project, the Sierra Club and the European Environmental Bureau purchased skin lighteners from eBay and Amazon websites. The brands purchased included many previously identified as high mercury by New York City, the state of Minnesota, the European Union, Singapore, UAE, the Philippines and many other national governments. Nineteen products had illegal mercury levels, typically more than 10,000 times higher than the legal threshold of 1ppm.

Over 50 civil society groups from more than 20 countries sent letters today to Amazon and eBay, calling on them to stop marketing illegal mercury-based skin lightening creams. In their letters, the groups are calling on Amazon and eBay to among others to ensure the products they sell comply with government regulations, develop and monitor lists of toxic skin lighteners and require prior sale approval for those to be sold.

[Letter sent to Amazon](#)

[Letter sent to eBay](#)

[Skin-lightening creams on government detention lists, purchased from internet and lab tested](#)

#### **5. *“Building Local to Global Coalitions for Chemicals and Waste Management, Towards Zero Mercury Use, Supply, Trade and Emissions,”***

Together with the UNDP Small Grants Programme (SGP), the European Environmental Bureau and the Zero Mercury Working Group (EEB-ZMWG) have been organising and hosting a series of regional workshops under the project, *“Building Local to Global Coalitions for Chemicals and Waste Management, Towards Zero Mercury Use, Supply, Trade and Emissions.”* Consistent with the goal of the Minamata Convention on Mercury, the objective of the workshops were to develop public interest NGOs’ capacity to develop and implement mercury reduction projects at the local level through fostering information sharing and learning experiences in mercury management, with an emphasis on source and use reduction. Furthermore, training on how to apply for and implement a UNDP SGP project was provided, in view of having more UNDP SGP mercury-related projects granted to public interest NGOs in the coming years.

To date, the project is about to be finalised. Thus far, the EEB/ZMWG, in collaboration with the GEF SGP – UNDP, has held two workshops in 2018. The Asian regional NGO workshop took place on the 17<sup>th</sup> -18<sup>th</sup> of May 2018, in Bangkok, Thailand; there was a total of 37 participants, representing 23 countries. The African regional workshop took place on the 6<sup>th</sup> - 7<sup>th</sup> of October 2018 in Lusaka, a total of 30 participants, representing 18 countries attended the meeting. In 2019 the third and last meeting was organised in Latin America and the Caribbean region, held in Panama 1-2 June. A total of 31 participants, representing 14 countries attended the meeting, including UNDP officials, EEB /ZMWG facilitators and NGOs.

In summary around 90 participants have been directly trained from 51 countries including UNDP/EEB/ZMWG facilitators and Developing country NGOs; the intention is that more will be reached in the coming months at least electronically.

In all three meetings the objective was, during the first day, to introduce the international mercury agenda, set forth by the Minamata Convention on Mercury. Focus was given to phasing out mercury added product, on artisanal small-scale gold mining and on emissions to air. Three concept notes were drafted to be finalised later in the year. In parallel, the second day, focused on covering the procedures and nature of the UNDP GEF Small Grants Programme in order to provide information on how it can be utilized as a resource, to assist in the implementation of the international agenda on mercury.

The discussions during the meetings were fruitful and some projects on mercury under SGP have already been approved after relevant calls that opened in countries following mainly our 2018 workshops.

Over the last years<sup>xxxiv</sup>, the EEB/ZMWG has place a considerable amount of effort into developing the capacity of its NGO partners, including but not limited to those mentioned above. Through the projects described, these NGOs have become key stakeholders and resources in their respective countries. In order to expand these efforts further, additional funding for NGOs that would allow continued support in the form of technical assistance, capacity building and technology transfer, is essential to the effective implementation of the Minamata Convention.

#### ***6. ZMWG consideration for a list of areas where capacity building may be necessary for governments***

In addition, the ZMWG has developed a list of areas where we would consider that capacity building would be useful for governments. We hope that this list can further be considered by the Minamata Convention Secretariat, but also further developed and we would welcome further input.

- Training, legal, and institutional (national and local) enforcement capacities associated with implementation of Article 3 supply and trade obligations, including development of framework for legal trade, performance of illegal trade threat assessment, and capacity for prosecuting and managing seizures of illegally traded mercury
- Training for customs and border control officers on movement of mercury (covered above), mercury added products and mercury waste (all categories).
- Product testing capacity and associated training to determine compliance with the Convention, including use of XRF or other devices to facilitate field testing of priority products such as skin lightening creams
- Platforms for exchanging information on products found to be non-compliant through testing or other means

- Air emissions monitoring, reporting, and data management
- Development of model or prototype storage facilities for small or mid-sized quantities of mercury reasonable available for purchase or construction in a variety of locations (may also apply to seized mercury above)
- Platform for exchange of information on public and private waste management capacity, organized by region and waste type
- Best practices for segregation of used mercury products, targeting institutions with larger volumes
- Training on safe removal of mercury stockpiles- including a strategy to assist them on removal of mercury stockpiles
- Training on interim storage, disposal and waste of mercury-added products
- Training, reporting, and data management to facilitate Article 21 reporting
- Pre and post COP webinars

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<sup>i</sup> Mercury Policy Project Report to the UNEP Chemicals Branch Division of Technology, Industry and Economics (UNEP) on “Phasing Down Dental Amalgam: Country Case Studies” ; Project Account Number: MC/4030-09-04-2204.

<sup>ii</sup> Health Care Research Collaborative of the University of Illinois at Chicago School of Public Health, the Healthier Hospitals Initiative, and Health Care Without Harm, *Mercury in Dental Amalgam and Resin-Based Alternatives: A Comparative Health Risk Evaluation* (June 2012), p.6.

<sup>iii</sup> World Health Organization, *Future Use of Materials for Dental Restoration* (2011), p.16.

<sup>iv</sup> Opdam NJ, Bronkhorst EM, Loomans BA, Huysmans MC, Longevity of repaired restorations: A practice based study, *Journal of Dentistry* 40 (2012) 829–835, [https://www.researchgate.net/profile/Niek\\_Opdam/publication/228441700\\_Longevity\\_of\\_repaired\\_restorations\\_A\\_practice\\_based\\_study/links/0c96052766a325245a000000.pdf](https://www.researchgate.net/profile/Niek_Opdam/publication/228441700_Longevity_of_repaired_restorations_A_practice_based_study/links/0c96052766a325245a000000.pdf)

<sup>v</sup> EC’s science committee, SCENIHR, *Final opinion on the safety of dental amalgam and alternative dental restoration materials for patients and users*, [http://ec.europa.eu/health/scientific\\_committees/emerging/docs/scenihr\\_o\\_046.pdf](http://ec.europa.eu/health/scientific_committees/emerging/docs/scenihr_o_046.pdf), p.69, April 2015

<sup>vi</sup> Opdam NJ, Bronkhorst EM, Loomans BA, Huysmans MC, Longevity of repaired restorations: A practice based study, *Journal of Dentistry* 40 (2012) 829–835, [https://www.researchgate.net/profile/Niek\\_Opdam/publication/228441700\\_Longevity\\_of\\_repaired\\_restorations\\_A\\_practice\\_based\\_study/links/0c96052766a325245a000000.pdf](https://www.researchgate.net/profile/Niek_Opdam/publication/228441700_Longevity_of_repaired_restorations_A_practice_based_study/links/0c96052766a325245a000000.pdf)

<sup>vii</sup> Lars D. Hylander & Michael E. Goodsite, Environmental Costs of Mercury Pollution, *Science of the Total Environment* 368 (2006) 352-370, <http://www.aikencolon.com/assets/images/pdfs/Nikro/MercuryVacuum/STOTENbestpaper.pdf>

<sup>viii</sup> Pichery, C. et al, *Environ Health*. 2012; 11: 53. *Economic evaluation of health consequences of prenatal methylmercury exposure in France*, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3533723/>, [https://www.jstor.org/stable/3436250?seq=1#page\\_sc\\_an\\_tab\\_contents](https://www.jstor.org/stable/3436250?seq=1#page_sc_an_tab_contents)

<sup>ix</sup> UNEP, Chemicals Branch, *Phasing down dental mercury use: Advisory note for the insurance working group of UNEP Finance Initiative*.

<sup>x</sup>BIO Intelligence Service (2012), *Study on the potential for reducing mercury pollution from dental amalgam and batteries*, Final report prepared for the European Commission-DG ENV, p.67.

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<sup>xi</sup> Keml (2005) – Mercury-Free Dental Fillings, Phase-out of amalgam in Sweden, Swedish Chemicals Inspectorate (Keml), 2005;

[http://www.who.int/ifcs/documents/forums/forum5/pm9\\_05.pdf](http://www.who.int/ifcs/documents/forums/forum5/pm9_05.pdf)

<sup>xii</sup> ibid.

<sup>xiii</sup> Mercury Policy Project Report to the United Nations Environment Program Chemicals Branch Division of Technology, Industry and Economics on “Phasing Down Dental Amalgam: Country Case Studies”; Project Account Number: MC/4030-09-04-2204;

<https://wedocs.unep.org/bitstream/handle/20.500.11822/11624/Dental.Amalgam.10mar2016.pages.WEB.pdf>.

<sup>xiv</sup> BIO Intelligence Service (2012), *Study on the potential for reducing mercury pollution from dental amalgam and batteries*, Final report prepared for the European Commission-DG ENV, p.67.

<sup>xv</sup> World Health Organization, *Future Use of Materials for Dental Restoration* (2011), p.16; WHO 2010

<sup>xvi</sup> Regulation (EU) 2017/852 of EU Parliament and of the Council of 17 May 2017 on mercury, and repealing Regulation (EC) No 1102/2008

<sup>xvii</sup> MPP Report to the United Nations Environment Program Chemicals Branch Division of Technology, Industry and Economics on “Phasing Down Dental Amalgam: Country Case Studies”; Project Account Number: MC/4030-09-04-2204.

<https://wedocs.unep.org/bitstream/handle/20.500.11822/11624/Dental.Amalgam.10mar2016.pages.WEB.pdf>.

<sup>xviii</sup> UNEP, *Lessons from Countries Phasing Down Dental Amalgam*

*Use* (2016), <https://wedocs.unep.org/bitstream/handle/20.500.11822/11624/Dental.Amalgam.10mar2016.pages.WEB.pdf>.

<sup>xix</sup> Joint Order of The Minister of Health and The National Emergency Management Agency of Mongolia (11 January 2011)

<sup>xx</sup> UN Environmental Programme, *Promoting Dental Amalgam Phase-Down Measures Under the Minamata Convention and Other Initiatives, For “Especially Women, Children and, Through Them, Future Generations”, Workshop Report* (2018), <https://mercuryfreedentistry.files.wordpress.com/2018/06/workshop-report.pdf>, pp.29-29.

<sup>xxi</sup> UN Environmental Programme, *Promoting Dental Amalgam Phase-Down Measures Under the Minamata Convention and Other Initiatives, For “Especially Women, Children and, Through Them, Future Generations”, Workshop Report* (2018), <https://mercuryfreedentistry.files.wordpress.com/2018/06/workshop-report.pdf>, pp.29-29;

*Inventory of Mercury Releases in Mauritius* (2014), [http://health.govmu.org/English/Departments-Hospitals/Departments/Documents/Hg%20Inventory%20Report%20\(1\).pdf](http://health.govmu.org/English/Departments-Hospitals/Departments/Documents/Hg%20Inventory%20Report%20(1).pdf), p. 19.

<sup>xxii</sup> Directive No: 261/KCB - QLCL&CĐT, SOCIALIST REPUBLIC OF VIETNAM, MINISTRY OF HEALTH, HEALTH SERVICE ADMINISTRATION DEPARTMENT, March 25, 2019

<sup>xxiii</sup> Minamata Convention on Mercury, Initial Assessment Report for Nigeria, pp.81-82; GEF, UNIDO, UNITAR, June 2017

<sup>xxiv</sup> Health Care Research Collaborative of the University of Illinois at Chicago School of Public Health, the Healthier Hospitals Initiative, and Health Care Without Harm, *Mercury in Dental Amalgam and Resin-Based Alternatives: A Comparative Health Risk Evaluation* (June 2012), p.6.

<sup>xxv</sup> DHSA (2003) – A National Clinical Guideline for the Use of Dental Filling Materials, Department for Municipal Health and Social Services, Directorate for Health and Social Affairs, Universitetsgata 2, Oslo, Norway, ISBN 82-8081-031, December 2003,

<sup>xxvi</sup> World Health Organization, *Future Use of Materials for Dental Restoration* (2011), p.16.

<sup>xxvii</sup> Lynch et. al., *Managing the phase-down of amalgam: part I. Educational and training issues*, BR DENT J. (Aug. 2013).

<sup>xxviii</sup> Mandari GJ, Mandari GJ, Frencken JE, Frencken JE, van't Hof MA, *Six-Year Success Rates of Occlusal Amalgam and Glass-Ionomer Restorations Placed Using Three Minimal Intervention Approaches*. CRIES RES 2003;37:246-253.

<sup>xxix</sup> Lynch et. al., *Managing the phase-down of amalgam: part I. Educational and training issues*, BR DENT J. (Aug. 2013).

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xxxi Pan American Health Organization, *Oral Health of Low Income Children: Procedures for Atraumatic Restorative Treatment (PRAT)* (2006), p.xi.

xxxii [Jack L Ferracane](#), *Resin composite--state of the art*, *DENTAL MATERIALS*, Vol.27, issue 1, p.29-38 (Jan. 2011).

xxxiii BIO Intelligence Service (2012), Final report prepared for the European Commission-DG ENV, p.69; In 2015 SCENIHR further confirmed “*The longevity of restorations of alternative materials in posterior teeth has improved with the practitioner’s familiarity with effective placement*”

xxxiv EEB/ZMWG has been funding around 5 projects per year since 2005, in around 30 countries.  
[http://www.zeromercury.org/index.php?option=com\\_content&view=article&id=52&Itemid=41](http://www.zeromercury.org/index.php?option=com_content&view=article&id=52&Itemid=41)