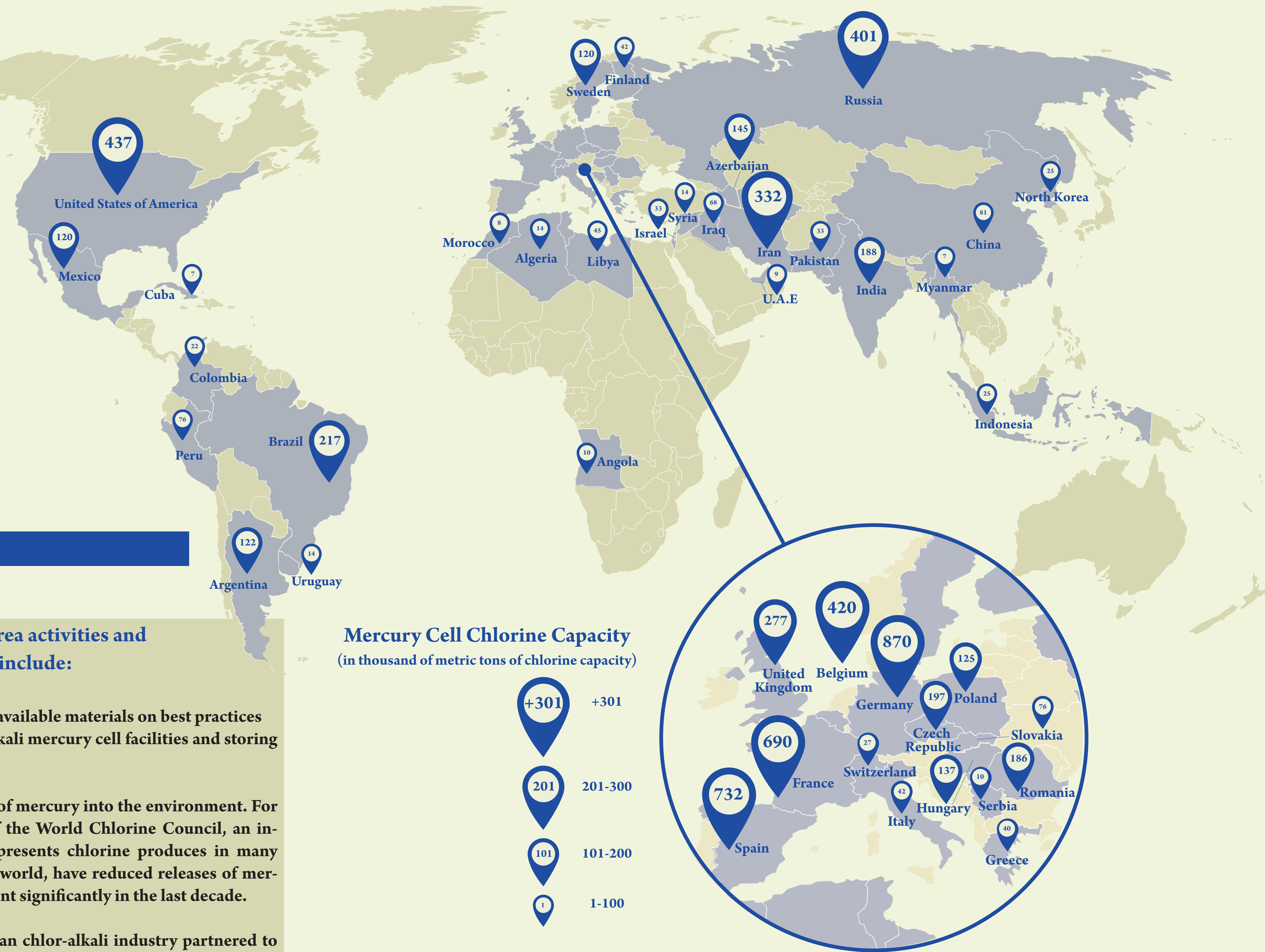


CHLOR-ALKALI PARTNERSHIP AREA

UNEP GLOBAL MERCURY

2010 GLOBAL MERCURY CELL CHLORINE CAPACITY



CHLOR-ALKALI PARTNERSHIP AREA ACTIVITIES AND ACCOMPLISHMENTS

Consistent with the overall goal of the UNEP Global Mercury Partnership, the objective of the chlor-alkali partnership area is to significantly minimize and where feasible eliminate global mercury releases to air, water, and land that may occur from chlor-alkali production facilities. Partners include industry and environmental stakeholders, as well as national governments. The partnership area seeks to:

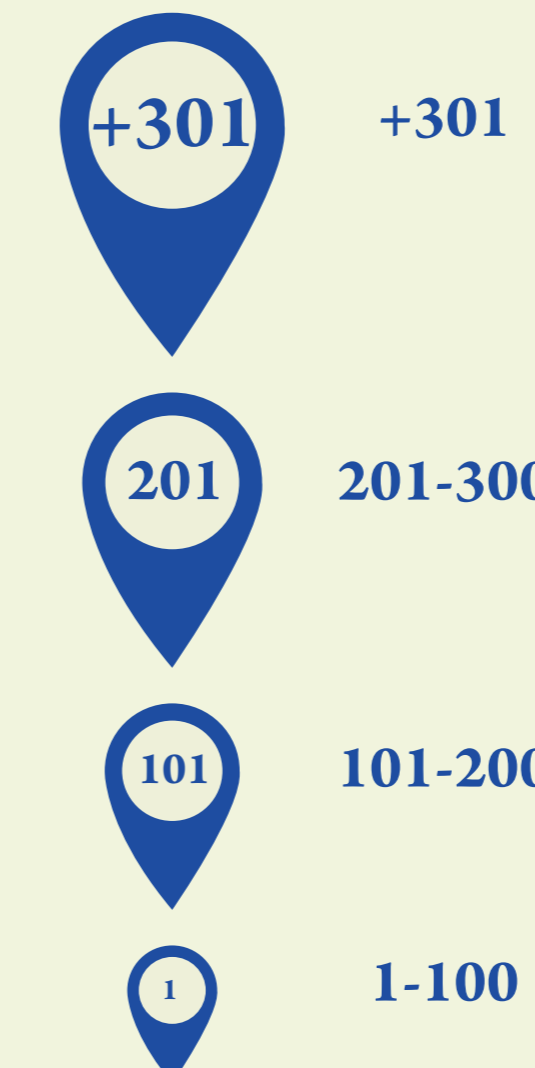
- Prevent the construction of new mercury-cell chlor-alkali production facilities.
- Reduce mercury emissions and use from existing mercury-cell facilities.
- Encourage conversion to non-mercury processes.
- Reduce or eliminate mercury releases from waste generated by chlor-alkali production facilities including waste from conversion to non-mercury processes.
- Promote environmentally-sound options for storage of surplus mercury generated by the conversion, phase-out, or closure of mercury-cell chlor-alkali facilities.

Key partnership area activities and accomplishments include:

- Making publically available materials on best practices for operating chlor-alkali mercury cell facilities and storing excess mercury.
- Reducing releases of mercury into the environment. For example, members of the World Chlorine Council, an industry group that represents chlorine producers in many countries around the world, have reduced releases of mercury to the environment significantly in the last decade.
- EPA and the Russian chlor-alkali industry partnered to reduce mercury consumption and environmental release from Russian chlor-alkali facilities. Since 2005, total mercury releases from chlorine production were reduced by 53%, compared with the 2004 baseline.
- India instituted a very successful voluntary program that helped convert 96% of mercury cell facilities since 2003. This effort started before the Partnership, and India shared its experience with other Partners.
- Developed an improved global inventory of chlor-alkali facilities that use mercury (see table below).

Mercury Cell Chlorine Capacity

(in thousand of metric tons of chlorine capacity)



A REVISED ESTIMATE OF GLOBAL MERCURY CELL CHLORINE CAPACITY

The UNEP Global Mercury Partnership has updated a 2004 database of global mercury cell chlorine capacity using data from the 2008 Chemical Economic Handbook (SRI Consulting) and personal communication from partners and stakeholders in 2009-2011. According to data compiled, some 100 facilities in 43 nations today use mercury in this industry. Between 2005 and 2011, global mercury cell chlorine capacity is estimated to have declined by about 29 percent.

According to the revised database, there remains approximately 6.4 million metric tons per year of mercury cell chlorine production capacity worldwide, compared to about 9 million metric tons per year in 2005.

The database includes information accounting for 39 facilities in 14 countries that have eliminated a total of approximately 2.6 million metric tons per year of

mercury cell chlorine capacity since 2005. 22 facilities in 10 countries have announced or are said to be contemplating plans to eliminate a total of 2.2 million metric tons per year of mercury cell chlorine capacity in the next five years. In the United States, two of the four remaining mercury cell facilities have announced plans to close or convert by 2012.

In addition, The European chlor-alkali industry, represented by EuroChlor, has made a voluntary pledge to phase out all mercury-cell chlor-alkali units by 2020. These pledged phase-outs are not included in the database, which only lists phase-outs planned for specific facilities from 2010-2015. After accounting for the EU voluntary pledge, and the facilities with closure/conversion plans as noted in the database, the number of plants remaining is 55, located in 26 countries, with an aggregated chlorine capacity of about 2 million metric tons per year.

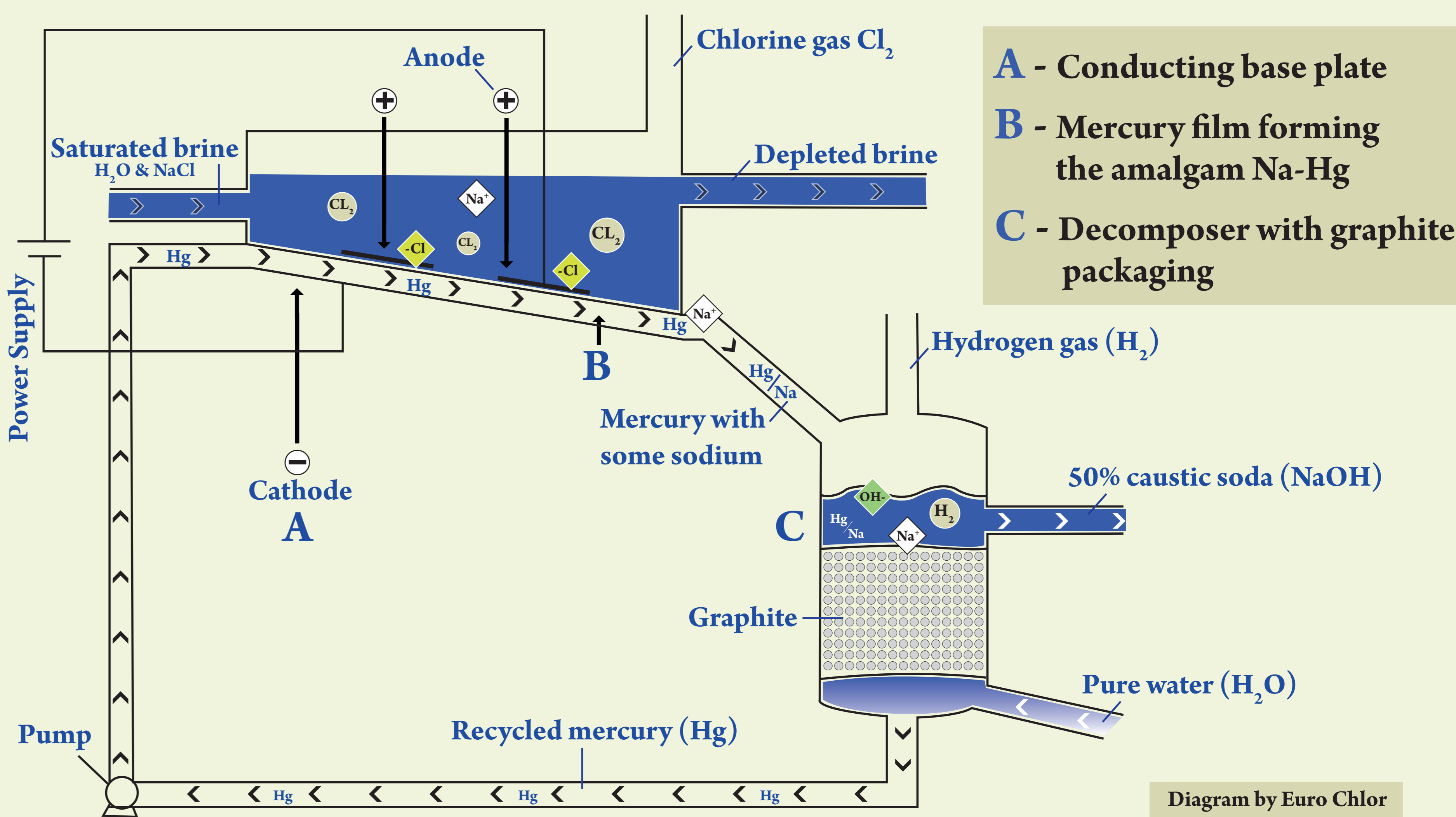
DECLINE IN MERCURY USE IN CHLOR-ALKALI PRODUCTION

The mercury-cell process is used in some chlor-alkali facilities to produce chlorine and caustic soda. This technology currently represents approximately 20% of global chlor-alkali production. Mercury cell chlor-alkali production remains a significant user of mercury and is a relevant source of mercury releases to the environment. Mercury cell facilities which close or convert to non-mercury cell technologies also have significant amounts of surplus mercury which require environmentally-sound long-term management.

Globally, the number of mercury-cell facilities is on the decline, consistent with the end of the economic life of these facilities. There are alternatives to the mercury-cell process that are more energy efficient and have lower operating costs.

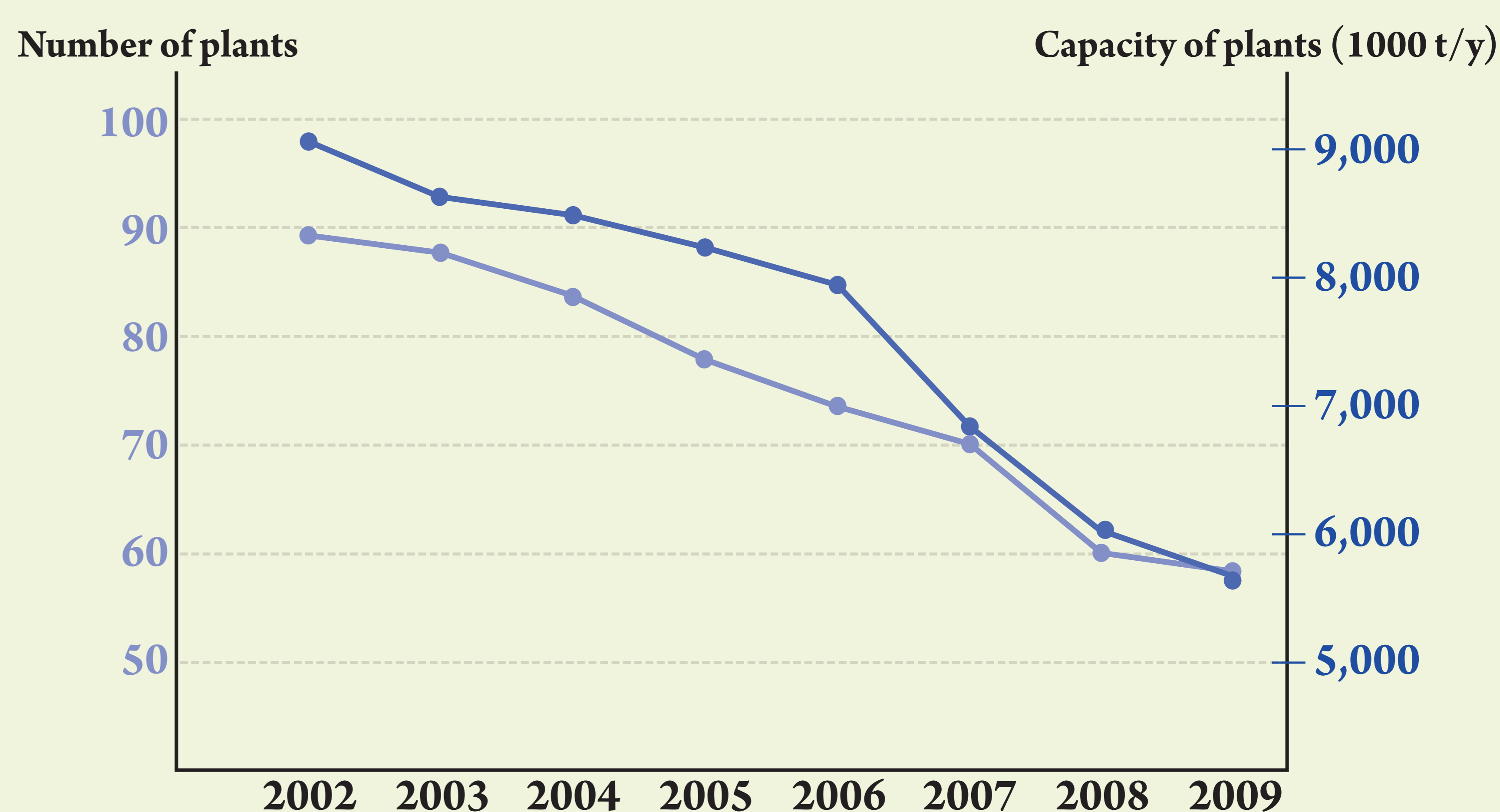
According to data compiled by the United Nations Environment Program (UNEP), mercury demand from the chlor-alkali sector was about 500 tons in 2005 (UNEP 2006), or about 15% of total global demand. Mercury emissions to the air were estimated to be 47 tons in 2005 (UNEP 2008).

HOW MERCURY IS USED IN CHLOR-ALKALI PROCESS



PROGRESS REDUCING MERCURY USE & EMISSIONS

Mercury-based production capacity down



Graph showing the decrease in the number of mercury cell chlor-alkali facilities and the total chlorine capacity of mercury cell facilities.

Data from World Chlorine Council (WCC) member countries, courtesy of WCC.

GLOBAL INVENTORY

Country	Number of mercury-cell facilities	2010 mercury cell chlorine capacity	Planned capacity reductions 2010-2015	Known capacity reductions since 2005
Algeria	2	14	-	-
Angola	1	10	-	-
Argentina*	2	122	-	-
Azerbaijan	1	145	145	-
Belgium*	2	420	420	-
Bosnia & Herz.	3	0	-	-
Brazil*	4	217	-	115
Canada	-	0	-	33
China	7	81	-	-
Columbia	1	22	-	-
Cuba	1	7	-	-
Czech Republic*	2	197	197	-
Egypt	-	0	8	-
Finland*	1	42	-	-
France*	6	690	170	-
Germany*	6	870	290	478
Greece*	1	40	-	-
Hungary*	1	137	-	-
India*	7	188	188	453
Indonesia ¹	5	25	-	-
Iran	4	332	-	20
Iraq	3	68	-	-
Israel	1	33	-	-

Country	Number of mercury-cell facilities	2010 mercury cell chlorine capacity	Planned capacity reductions 2010-2015	Known capacity reductions since 2005
Italy*	1	42	42	294
North Korea	2	25	-	-
Libya	1	45	-	-
Mexico	2	120	-	-
Morocco	1	8	-	-
Myanmar	1	7	-	-
Pakistan	1	33	-	170
Peru	2	76	-	-
Philippines	-	0	-	14
Poland*	1	125	125	80
Romania*	1	186	186	-
Russia*	3	401	-	102
Serbia & Mont.	4	10	-	-
Slovakia*	1	76	-	-
Spain*	7	732	-	25
Sweden*	1	120	120	95
Switzerland*	1	27	-	-
Syria	1	14	-	-
Turkmenistan	1	-	-	-
U.A.E.	2	9	-	-
United Kingdom*	1	277	-	21
United States*	4	437	338	694
Uruguay*	1	14	-	-

units are thousands of metric tons of chlorine capacity
¹ Indonesia is reported to have phased out mercury cell production in 2011
* Countries whose facilities are members of the World Chlorine Council

