Best Export Markets
For
U.S. Pollution Control Equipment, 2007

Best Export Markets for U.S. Pollution Control Equipment was compiled by Jose J. Aguilar Arreola, under the supervision of Maurice Kogon, Director of the El Camino College Center for International Trade Development (CITD) in Hawthorne, California. The report is based largely on 2007 Country Commercial Guides (CCGs) prepared by United States Commercial Service (USCS) posts abroad. All CCGs include a standard chapter "Leading Sectors for U.S. Exports." This report drew from those CCGs which specifically recommended **Pollution Control Equipment** as a best prospect for U.S. exports.

The entire report is also available as a Word document, in print or electronically, for $25.00. To order, contact the El Camino College CITD at: 310-973-3173 or **mkogon@elcamino.edu**.

CENTER FOR INTERNATIONAL TRADE DEVELOPMENT
13430 Hawthorne Blvd, Hawthorne, California 90250 USA
http://elcamino.citd.org

Phone: (310) 973-3173 Fax: (310) 973-3132 E-mail: mkogon@elcamino.edu.

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I. Export Market Brief

A. Water Filtering or Purifying Machinery & Apparatus -- HS 842121

This Market Brief provides an overview of the world market for Water Filtering or Purifying Machinery & Apparatus (HS 842121), based on the latest trade statistics and market research.

Export growth: U.S. exports of products in the HS 842121 category rose from $526.51 million in 2003 to $787.29 million in 2006, an increase of 49.5 % over the four-year period.

Leading Export Markets: Canada is by far the leading market for U.S. exports of products in the HS 842121 category ($123.5 million in 2006), or 15.7% of total. Other top markets (all valued above $30 million were: Japan (7.8%), Korea (6.3%), Mexico (6.2%), China (5.9%), France (4.4%) and Singapore (3.8%). Other significant markets (above $20 million) were Netherlands (3.4%), United Kingdom (3.0%), Australia (2.8%), Taiwan (2.8%), and Dominican Republic (2.6%).

Fastest Growing Export Markets: The leading markets with both high and sustained growth rates for U.S. exports of products in the HS 842121 category over the latest four years (2003-06 and continuing in 2005-06) were: Singapore, Netherlands, Korea, and France. Other significant growth markets over the 2003-2006 periods were Dominican Rep, Egypt, Canada, Mexico, Japan, India, and Belgium.

Leading Importing Countries: The top foreign importers of products in the HS 842121 category in 2006 (all above $150 million) were Russia (8.5% of total world imports), Canada (7.0%), United Kingdom (6.7%), and China (6.6%). Other significant importers (all above $100 million) were Germany (5.3%), Mexico (5.1%), and Korea (4.7%).

World Market Size & U.S. Share: Total world exports of products in the HS 842121 category by all countries reached $3.2 billion in 2006, down from $3.7 billion in 2005. The U.S. had a 24.6% share of the total world market in 2006. Other world suppliers with significant market shares were Germany (23.7%), Canada (9.0%), Italy (7.2%), France (6.1), and United Kingdom (4.6%).

Best Market Prospects: The markets listed below appear to be particularly promising for U.S. exports of products in the HS 842121 category over the next two years; based on recommendations of U.S. commercial specialists in these countries:

- **Australia**
- **Brazil**
- **Chile**
- **Colombia**
- **Czech Republic**
- **Hong Kong**
- **Italy**
- **Kazakhstan**
- **Peru**
- **Philippines**
- **Singapore**
- **South Africa**
- **Spain**
- **Sweden**
- **United Arab Emirates**
- **Vietnam**

I. Export Market Brief

B: Filtering or Purifying Machinery & Apparatus for Gases -- HS 842139

This Market Brief provides an overview of the world market for filtering or purifying machinery and apparatus for gases (HS 842139) based on the latest trade statistics and market research.

Export growth: U.S. exports of products in the HS 842139 category rose from $1 billion in 2003 to $1.3 billion in 2006, an increase of 27.5 % over the four-year period.

Leading Export Markets: Canada is by far the leading market for U.S. exports of products in the HS 842139 category ($550.1 million in 2006, or 42.65% of total). Other top markets (all valued above $40 million) were: Mexico (9.96% of total), Japan (8.44%), China (4.75%), and Germany (3.36%).Other significant markets above $20 million were: Korea (2.49%), Taiwan (2.20%), Netherlands (1.89%), Brazil (1.57%), Thailand (1.56%) and Singapore (1.55%).

Fastest Growing Export Markets: The leading markets with both high and sustained growth rates for U.S. exports of products in the HS 842139 category over the latest four years (2003-06 continuing in 2005-06) were: Netherlands, Singapore, Germany, China, and Japan. Other significant growth markets over the 2003-2006 periods were Brazil, Korea, South Africa and United Arab Emirates.

Leading Importing Countries: The top foreign importers of products in the HS 842139 category in 2006 were Germany (18.1%), China (9.6%), and Canada (8.7%). Other significant importers all above $2 million were United Kingdom (5.9%), Mexico (5.0%), Belgium (3.7%), Italy (3.3%), and Russia (3.3%).

World Market Size & U.S. Share: Total world exports of products in the HS 842139 category by all countries reached $8.6 billion in 2006, up from $ $7.6 in 2005. The U.S. had a 15.1% share of the total world market in 2006, topped by South Africa (27.9%) and Germany (21.4%). Other world suppliers with significant market shares were United Kingdom (6.1%), Mexico (6.1%), Canada (5.0%) and Italy (4.5%).

Best Market Prospects: The markets listed below appear to be particularly promising for U.S. exports of products in the HS 842139 category over the next two years; based on recommendations of U.S. commercial specialists in these countries:

- **Australia**
- **Brazil**
- **Chile**
- **Colombia**
- **Czech Republic**
- **Hong Kong**
- **Italy**
- **Kazakhstan**
- **Peru**
- **Philippines**
- **Singapore**
- **South Africa**
- **Spain**
- **Sweden**
- **United Arab Emirates**
- **Vietnam**

II. Target Market Matrix
A. Water Filtering or Purifying Machinery & Apparatus (HS 842121)
Selection Criteria

This matrix assesses the U.S. industry's market potential in each listed country, based on how well the country performed against the 11 "predictor" criteria represented in Columns 1-11 below. A **double X** in the Column cell indicates the country met the criterion very well; a **single X** indicates reasonably good performance; a **blank** indicates the country was lacking in that criterion. The countries with the greatest number of XX's and X's across the most number of criteria are presumed to offer greater export potential for the industry, based on this methodology.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Argentina											
Australia	X	X							X	XX	
Austria											X
Belgium			X	X		XX					X
Brazil			XX		X						
Canada	XX			XX			XX		XX	XX	X
Chile		X			X						
China	XX			XX			XX				X
Czech Republic											
Denmark											
France	X		X								X
Germany				XX			X				X
Hong Kong											
Hungary						X	X	X	X	XX	
India		X			XX	X					
Ireland		XX			X						
Israel											
Italy				X							X
Japan	XX						X				
Korea	XX		XX	X							
Malaysia				X	X						
Mexico	XX			XX	XX		XX	X	X	X	
Netherlands	X	XX	X								
Poland						XX					
Russia											
Saudi Arabia											
Singapore	X	XX	XX						XX		
South Africa						X			XX		
Spain		X							XX	X	
Sweden								XX	XX		
Switzerland				X							
Taiwan	X						X				
Thailand					XX						
UAE								X	X	X	
UK	X			XX			X				X
Ukraine											
Venezuela			XX								

Key: Columns/Criteria

1. Largest export markets, latest year
2. Fastest growing export markets, past 3 yrs
3. Fastest growing export markets, latest year
4. Largest importing countries, latest year
5. Fastest growing importing countries, past 3 yrs
6. Fastest growing importing countries, latest year
7. Strong share of import market, latest year
8. Limited competition from local producers
9. High receptivity to products from your country
10. No significant market barriers
11. Recommended as a "best" export market

II. Target Market Matrix
B. Filtering or Purifying Machinery & Apparatus for Gases (HS 842139) Selection Criteria

This matrix assesses the U.S. industry's market potential in each listed country, based on how well the country performed against the 11 "predictor" criteria represented in Columns 1-11 below. A **double X** in the Column cell indicates the country met the criterion very well; a **single X** indicates reasonably good performance; a **blank** indicates the country was lacking in that criterion. The countries with the greatest number of XX's and X's across the most number of criteria are presumed to offer greater export potential for the industry, based on this methodology.

	1	2	3	4	5	6	7	8	9	10	11
Argentina											
Australia									XX	XX	
Austria		X	X								
Belgium			XX	X							X
Brazil											
Canada	XX			XX	X		XX		XX	XX	X
Chile									XX	XX	
China	X			XX			XX				X
Czech Republic											
Denmark					X						
France											
Germany	X			XX			XX				XX
Hong Kong											
Hungary											
India											
Ireland											
Israel			XX								
Italy				X				XX	XX	X	X
Japan	XX		XX				X				
Korea	X										
Malaysia						X					
Mexico	XX			X			XX	X	X	X	X
Netherlands											
Poland					XX						
Russia		X	X								
Saudi Arabia			X		XX	XX					
Singapore						X			XX		
South Africa		XX	X				X		XX		XX
Spain						XX			XX		
Sweden								XX	XX		
Switzerland											
Taiwan	X										
Thailand				X	X	XX					
Turkey		XX	XX		X						
UAE			X			X		X	X	X	
UK				X			X				X
Ukraine											
Venezuela		X									

Key: Columns/Criteria

1. Largest export markets, latest year
2. Fastest growing export markets, past 3 yrs
3. Fastest growing export markets, latest year
4. Largest importing countries, latest year
5. Fastest growing importing countries, past 3 yrs
6. Fastest growing importing countries, latest year
7. Strong share of import market, latest year
8. Limited competition from local producers
9. High receptivity to products from your country
10. No significant market barriers
11. Recommended as a "best" export market

III. Market Potential Indicators

U.S. Pollution Control Equipment

A. Top 30 U.S. Export Markets, 2003-2006, by Country. These tables show the leading and fastest growing markets for U.S. Pollution Control Equipment. Source: U.S Census Bureau.

1. Water Filtering or Purifying Machinery & Apparatus (HS 842121)
2. Filtering or Purifying Machinery & Apparatus for Gases NESOI (HS 842139)

B. Top 30 World Importers, 2006, by Country. These tables show the leading and fastest growing world importers of Pollution Control Equipment. Source: United Nations COMTRADE.

1. Water Filtering or Purifying Machinery & Apparatus (HS 842121)
2. Filtering or Purifying Machinery & Apparatus for Gases NESOI (HS 842139)

C. Top 30 World Exporters & U.S. Market Share, 2006, by Country. These tables show the U.S. and competitor-country shares of total world exports of Pollution Control Equipment. Source: United Nations COMTRADE.

1. Water Filtering or Purifying Machinery & Apparatus (HS 842121)
2. Filtering or Purifying Machinery & Apparatus for Gases NESOI (HS 842139)

D. Market Sizes & U.S. Share, 2004-2006, by Country. This table shows each "best prospect" country's total market, total imports, and imports from the U.S. for Pollution Control Equipment, and the U.S market share. Source: U.S. Commercial Staff in each country.

III. Market Potential Indicators

III .A. Top 30 U.S. Export Markets, 2003–2006, By Country

(Values in $ Thousands)

1. HS 842121: Water Filtering or Purifying Machinery and Apparatus

Country	2003	2004	2005	2006	% Change 2003-2006	%Change 2005-2006	% Share 2006
	In 1,000 Dollars						
Canada	76,832	93,896	105,830	123,516	60.8%	16.70%	15.7%
Japan	47,459	71,406	53,985	61,557	29.7%	14.00%	7.8%
Korea	27,428	26,730	30,121	49,663	81.1%	64.90%	6.3%
Mexico	41,410	37,574	46,087	48,993	18.3%	6.30%	6.2%
China	25,705	48,879	47,975	46,511	80.9%	-3.10%	5.9%
France	22,425	38,706	25,044	34,589	54.2%	38.10%	4.4%
Singapore	9,068	15,751	16,867	30,221	233.3%	79.20%	3.8%
Netherlands	8,119	10,916	19,728	26,403	225.2%	33.80%	3.4%
United Kingdom	24,968	19,687	22,416	23,991	-3.9%	7.00%	3.0%
Australia	9,873	12,350	26,294	22,419	127.1%	-14.70%	2.8%
Taiwan	15,312	24,799	31,175	22,403	46.3%	-28.10%	2.8%
Dominican Rep	4,993	12,752	18,870	20,784	316.3%	10.10%	2.6%
Belgium	13,037	12,081	13,394	18,686	43.3%	39.50%	2.4%
Saudi Arabia	15,509	11,511	16,601	15,571	0.4%	-6.20%	2.0%
Thailand	13,247	10,261	23,141	13,054	-1.5%	-43.60%	1.7%
Italy	15,538	11,957	13,272	13,008	-16.3%	-2.00%	1.7%
Hong Kong	9,239	11,921	12,292	12,453	34.8%	1.30%	1.6%
India	5,034	5,137	11,105	11,957	137.5%	7.70%	1.5%
United Arab Em	11,293	17,522	10,033	11,720	3.8%	16.80%	1.5%
Egypt	3,338	8,081	9,826	11,136	233.6%	13.30%	1.4%
Malaysia	13,154	8,987	10,840	10,412	-20.8%	-3.90%	1.3%
Spain	3,794	5,293	8,418	9,656	154.5%	14.70%	1.2%
Venezuela	6,431	4,573	3,002	8,824	37.2%	193.90%	1.1%
Brazil	6,394	3,812	3,989	8,451	32.2%	111.90%	1.1%
Germany	7,375	9,077	6,832	7,800	5.8%	14.20%	1.0%
Chile	3,447	2,228	5,969	7,556	119.2%	26.60%	1.0%
Israel	4,610	5,693	6,387	7,177	55.7%	12.40%	0.9%
Bahamas	1,697	1,299	3,622	5,446	220.9%	50.40%	0.7%
Ireland	1,557	2,402	4,533	4,973	219.4%	9.70%	0.6%
Colombia	1,416	914	1,385	4,234	199.0%	205.60%	0.5%
Subtotal :	**449,705**	**546,194**	**609,032**	**693,164**	**54.1%**	**13.80%**	**88.0%**
All Other:	**76,810**	**63,940**	**95,027**	**94,130**	22.5%	-0.90%	12.0%
Total	**526,514**	**610,134**	**704,059**	**787,294**	49.5%	11.80%	100.0%

Sources: U.S Department of Commerce and the U.S International Trade Commission

III. Market Potential Indicators

III .A. Top 30 U.S. Export Markets, 2003–2006, By Country

(Values in $ Thousands)

2. HS 842139 Filtering or Purifying Machinery and Apparatus for Gases NESOI

Country	2003	2004	2005	2006	% Change 2003-2006	% Change 2005-2006	% Share 2006
	In 1,000 Dollars						
Canada	552,407	555,083	555,352	550,144	-0.4%	-0.90%	42.65%
Mexico	128,966	119,391	92,791	128,472	-0.4%	38.50%	9.96%
Japan	57,030	43,252	43,101	108,931	91.0%	152.70%	8.44%
China	25,604	34,378	35,008	61,225	139.1%	74.90%	4.75%
Germany	15,139	19,023	25,152	43,323	186.2%	72.20%	3.36%
Korea	20,249	18,992	22,119	32,156	58.8%	45.40%	2.49%
Taiwan	27,877	34,548	24,833	28,346	1.7%	14.10%	2.20%
Netherlands	4,913	10,947	13,613	24,335	395.3%	78.80%	1.89%
Brazil	11,730	12,977	13,454	20,220	72.4%	50.30%	1.57%
Thailand	21,007	13,059	13,374	20,126	-4.2%	50.50%	1.56%
Singapore	6,952	9,924	18,477	20,037	188.2%	8.40%	1.55%
United Kingdom	19,898	19,237	15,986	19,055	-4.2%	19.20%	1.48%
Hong Kong	15,620	10,809	8,325	15,146	-3.0%	81.90%	1.17%
Venezuela	1,803	4,717	11,692	14,148	684.7%	21.00%	1.10%
Australia	14,576	10,395	11,087	11,970	-17.9%	8.00%	0.93%
South Africa	1,003	1,307	6,387	11,591	1055.6%	81.50%	0.90%
India	2,568	6,520	5,514	9,488	269.5%	72.10%	0.74%
Spain	5,930	6,798	6,473	9,438	59.2%	45.80%	0.73%
United Arab Em	2,215	4,890	4,329	8,769	295.9%	102.60%	0.68%
Belgium	3,647	2,588	3,502	8,587	135.5%	145.20%	0.67%
Italy	7,119	6,666	9,277	8,318	16.8%	-10.30%	0.64%
France	5,588	5,391	6,283	8,229	47.3%	31.00%	0.64%
Malaysia	3,971	4,657	4,772	8,020	102.0%	68.10%	0.62%
Saudi Arabia	2,391	6,426	3,899	7,854	228.5%	101.40%	0.61%
Israel	3,293	2,780	3,201	7,481	127.2%	133.70%	0.58%
Ireland	2,627	2,527	17,383	7,217	174.7%	-58.50%	0.56%
Turkey	610	693	3,242	7,175	1076.2%	121.30%	0.56%
Trin & Tobago	1,583	4,916	1,297	7,098	348.4%	447.40%	0.55%
Austria	824	993	3,090	6,445	682.2%	108.60%	0.50%
Russia	706	1,523	2,830	5,955	743.5%	110.40%	0.46%
Subtotal :	**967,846**	**975,409**	**985,844**	**1,219,303**	**26.0%**	**23.70%**	**94.52%**
All Other:	**43,594**	**86,804**	**70,193**	**70,695**	**62.2%**	**0.70%**	**5.48%**
Total	**1,011,440**	**1,062,213**	**1,056,037**	**1,289,998**	**27.5%**	**22.20%**	**100.00%**

Sources: U.S Department of Commerce and the U.S International Trade Commission

III. Market Potential Indicators

III .B Top 30 World Importers, 2006, by Country

1. Water Filtering or Purifying Machinery & Apparatus (HS-842121)

Importing Country	Total	% Share 2006
USA	$484,000,216	21.3%
Russian Federation	$194,117,327	8.5%
Canada	$157,942,672	7.0%
United Kingdom	$153,180,686	6.7%
China	$149,797,945	6.6%
Germany	$119,934,000	5.3%
Mexico	$116,275,509	5.1%
Rep. of Korea	$105,971,729	4.7%
Italy	$90,021,286	4.0%
Belgium	$62,720,850	2.8%
Malaysia	$58,577,391	2.6%
Romania	$49,191,156	2.2%
Switzerland	$48,139,595	2.1%
Austria	$41,621,440	1.8%
China, Hong Kong SAR	$33,869,462	1.5%
South Africa	$28,009,297	1.2%
Sweden	$27,350,345	1.2%
Norway	$25,583,929	1.1%
Ireland	$22,182,708	1.0%
Kazakhstan	$21,214,129	0.9%
Croatia	$20,825,072	0.9%
Denmark	$19,880,751	0.9%
Morocco	$18,529,686	0.8%
Brazil	$15,116,860	0.7%
Finland	$14,819,809	0.7%
Oman	$13,901,882	0.6%
Jordan	$13,715,216	0.6%
Belarus	$13,438,600	0.6%
Slovenia	$11,186,496	0.5%
Serbia	$11,144,149	0.5%
Subtotal	**$2,142,260,193**	**94.3%**
All Other	**$129,710,852**	**5.7%**
Total	**$2,271,971,045**	**100.0%**

Source: United Nations COMTRADE

III. Market Potential Indicators

III .B Top 30 World Importers, 2006, by Country

2. HS 842139 Filtering or Purifying Machinery & Apparatus for Gases NESOI

Importing Country	Total	% Share 2006
USA	$1,687,035,413	24.3%
Germany	$1,255,507,000	18.1%
China	$667,973,736	9.6%
Canada	$603,439,191	8.7%
United Kingdom	$406,895,787	5.9%
Mexico	$346,101,406	5.0%
Belgium	$254,201,704	3.7%
Italy	$231,661,730	3.3%
Russian Federation	$229,755,261	3.3%
Rep. of Korea	$147,181,073	2.1%
Austria	$130,796,780	1.9%
Sweden	$124,026,760	1.8%
Switzerland	$104,555,499	1.5%
Malaysia	$89,671,753	1.3%
South Africa	$70,514,505	1.0%
Brazil	$55,223,114	0.8%
Finland	$54,059,684	0.8%
Romania	$47,272,571	0.7%
Kazakhstan	$46,528,950	0.7%
Norway	$45,927,041	0.7%
Denmark	$40,251,497	0.6%
Iceland	$38,981,024	0.6%
China, Hong Kong SAR	$31,933,322	0.5%
Pakistan	$23,696,241	0.3%
Ireland	$20,286,937	0.3%
Slovenia	$20,221,526	0.3%
Serbia	$18,625,705	0.3%
Greece	$17,028,425	0.2%
Morocco	$13,790,919	0.2%
Peru	$13,636,268	0.2%
Subtotal	**$6,836,780,822**	98.5%
All Other	**$102,697,661**	1.5%
Total	**6,939,478,483**	100.0%

Source: United Nations COMTRADE

III. Market Potential Indicators

III .C Top 30 World Exporters & U.S. Share, 2006, by Country

1. Water Filtering or Purifying Machinery and Apparatus (HS-842121)

Exporting Country	Total	% Share 2006
USA	$787,294,277	24.6%
Germany	$758,423,000	23.7%
Canada	$287,218,335	9.0%
Italy	$230,350,989	7.2%
France	$195,122,601	6.1%
United Kingdom	$145,573,996	4.6%
Belgium	$97,392,142	3.0%
China	$91,239,308	2.9%
Austria	$89,451,043	2.8%
Sweden	$82,079,426	2.6%
Switzerland	$78,163,547	2.4%
Denmark	$54,176,390	1.7%
Rep. of Korea	$50,454,263	1.6%
Mexico	$45,636,315	1.4%
China, Hong Kong SAR	$44,342,773	1.4%
Finland	$25,360,589	0.8%
Malaysia	$20,408,664	0.6%
Brazil	$18,858,292	0.6%
Russian Federation	$16,455,868	0.5%
Norway	$14,676,767	0.5%
South Africa	$11,046,352	0.3%
Ireland	$10,785,275	0.3%
Latvia	$9,689,917	0.3%
Lithuania	$8,731,692	0.3%
Slovenia	$7,073,058	0.2%
Jordan	$2,835,634	0.1%
Colombia	$2,817,426	0.1%
Croatia	$2,319,624	0.1%
Estonia	$1,544,014	0.0%
Belarus	$1,019,500	0.0%
Costa Rica	$875,600	0.0%
Subtotal	**$3,191,416,677**	**99.9%**
All Other	**$4,476,287**	**0.1%**
Total	**$3,195,892,964**	**100.0%**

Source: United Nations COMTRADE

III. Market Potential Indicators

III .C Top 30 World Exporters & U.S. Share, 2006

2. Filtering or Purifying Machinery & Apparatus for Gases NESOI (HS 842139)

Exporting country	Total	% Share
South Africa	$2,381,377,314	27.9%
Germany	$1,824,157,000	21.4%
USA	$1,289,997,910	15.1%
United Kingdom	$523,766,842	6.1%
Mexico	$523,035,566	6.1%
Canada	$427,312,652	5.0%
Italy	$385,105,993	4.5%
China	$246,103,768	2.9%
Belgium	$231,123,899	2.7%
Austria	$132,321,462	1.5%
Sweden	$97,085,686	1.1%
Denmark	$85,351,030	1.0%
Finland	$80,424,733	0.9%
Rep. of Korea	$74,701,068	0.9%
Switzerland	$56,430,306	0.7%
Brazil	$35,468,038	0.4%
Malaysia	$34,198,144	0.4%
China, Hong Kong SAR	$33,489,215	0.4%
Slovenia	$21,527,240	0.3%
Norway	$16,562,624	0.2%
Russian Federation	$13,679,042	0.2%
Romania	$5,208,323	0.1%
Jordan	$3,060,187	0.0%
Estonia	$3,010,497	0.0%
Ireland	$2,967,572	0.0%
Croatia	$1,339,689	0.0%
Colombia	$1,260,528	0.0%
Serbia	$1,254,653	0.0%
Lithuania	$1,201,556	0.0%
Greece	$1,131,255	0.0%
Subtotal	**$8,533,653,792**	**99.9%**
Other Countries	**$5,053,088**	**0.1%**
All Countries	**8,538,706,880**	**100.0%**

Source: United Nations COMTRADE

III. Market Potential Indicators

III D. Market Sizes & U.S. Share, 2004-2006, by Country

The Table below provides comparative data on total market, import market, and imports from the U.S. for 16 countries considered "best prospects" for U.S. exports of Pollution Control Equipment. The countries are listed in alphabetic order, not in rank order. The data are based on local sources and reflect best estimates of USCS commercial officers each country. Statistical accuracy and comparability to other sources (e.g., "USDOC Bureau of Census") are affected by a number of factors, including lack of published figures in certain markets, variances in data collection techniques, sources of data, and industry definitions.

Pollution Control Equipment

(Values in $ Millions)

Country	Total Market			Total Imports			Imports from US			% U.S. Share
	2004	2006	% Change	2004	2006	% Change	2004	2006	% Change	2006
Australia	5,731	6,198	8.1%	2,148	4,338	102.0%	339	651	92.0%	15.0%
Brazil	2,700	3,400	25.9%	900	1,200	33.3%	400	600	50.0%	50.0%
Chile	297	296	-0.3%	42	45	7.1%	17	18	5.9%	40.0%
Colombia	108.5	138	27.2%	109.5	140	27.9%	71.3	82	15.0%	58.6%
Czech Republic	160	174	8.7%	33	39	18.2%	23	24	4.3%	61.5%
Hong Kong	150	200	33.3%	500	600	20.0%	150	220	46.7%	36.7%
Italy	4,570	6900	51.0%	950	1120	17.9%	420	440	4.8%	39.3%
Kazakhstan	105.7	252.6	139.0%	123.6	262.7	112.5%	21.7	28.9	33.2%	11.0%
Peru	95	94.7	-0.3%	89	87.7	-1.5%	28.3	28.9	2.1%	33.0%
Philippines*	399	1,009	152.9%	397	982	147.4%	103	93	-9.7%	9.5%
Singapore	5035	4651	-7.6%	7478	7600	1.6%	1960	1680	-14.3%	22.1%
Spain	21,129	24,199	14.5%	8,223	7,800	-5.1%	3,279	3,154	-3.8%	40.4%
South Africa	51	68	33.3%	35	48	37.1%	19	29	52.6%	60.4%
Sweden*	3,795	3,985	5.0%	2,452	2,679	9.3%	181	199	9.9%	7.4%
United Arab Emirates*	240	320	33.3%	250	340	36.0%	60	120	100%	35.3%
Vietnam	480	590	22.9%	190	250	31.6%	15	19.5	30.0%	7.8%

*2003-2005—replace 2006 with 2005

Source: U.S. Commercial Staff in each country.

IV. Best-Prospect Market Assessments

Following are overviews of "best prospect" markets for U.S. Pollution Control Equipment, based on observations of U.S. Commercial Service (USCS) posts in each country. The countries appear in alphabetical order. For more detailed market research on Pollution Control Equipment in these and other specific markets, see relevant Market Research Reports listed in Chapter VI. For general commercial and economic information on individual countries, see the relevant Country Commercial Guides (CCGs).

AUSTRALIA

Overview

The total environmental market (goods and services) is valued at close to $18 billion. Spending on environmental goods accounts for approximately 35% of the total market. The industry is comprised of about 2,500 mostly small firms that employ a total of 100,000 people. Imports currently satisfy 70% of total demand for goods. Australian consumers see four countries as leaders in the environmental industry: Japan in air pollution control; France in water; and the U.S. and Germany in pollution abatement equipment and waste management technologies. Other international key players are considered to be the U.K. Canada and the Netherlands.

Overall, the U.S. has the largest share (15%) of the import market for environmental technology. Anecdotal evidence suggests that the Free Trade Agreement between the U.S. and Australia (AUSFTA) has assisted the U.S. maintain this market share. The two driving forces behind the demand for environmental goods and services are increasing community awareness and revised government regulations. Population pressure in part explains the demand for water and wastewater treatment. In addition, water supply (primarily as a result of Australia's prolonged drought), salinity and greenhouse gas emissions are major environmental issues that will require not only better management practices but also significant investments in capital equipment.

Best Products/Services

The strongest opportunities are in the water and wastewater treatment sector, followed by reclamation and remediation. Wastewater treatment plants have, in the past, primarily been managed by state government-owned utilities. However, the corporatization of many utilities has resulted in increased opportunities for private sector participation in the delivery of water and wastewater services. Some water authorities have outsourced the management and maintenance of existing water treatment plants, while new plants are also being created under "build-own-operate-transfer" contracts by private sector interests. Many of these projects have in recent years been awarded to French and UK companies, in consortia with local firms. U.S. firms have been largely absent from the bidding process. The pressure on local government to reduce the volume of waste going to landfills, together with rising costs associated with monitoring and managing landfill sites, is creating a market for technology with applications in minimizing waste, re-use, recovery, and recycling.

Recycling remains the least popular sub-sector of the industry, given near monopoly buyers and low commodity prices. Despite this, regulatory pressure continues to force councils to look at more cost-effective recycling systems and services. As a result, some councils are now also exploring solid waste-to-energy recycling systems.

Site remediation is considered the most competitive area within the Australian environmental management industry. Contracting companies are required to provide integrated solutions in site assessment and remediation, and consultancies for decontamination projects in industrial metals, chemical contamination and agricultural chemical contamination. Environmental liabilities associated with business and property transactions are increasingly making on-site treatment and soil remediation more economically viable than the alternative of disposing of contaminants in landfill.

The following specific product opportunities have been listed under each product sub-sector:

Water and Wastewater Treatment
- Biofiltration systems.
- Presses for conversion of water or sludge waste.
- New oxidation systems for the removal of chemicals from industrial wastewater.
- Filtration equipment for industrial waste applications.
- Flowmeters for wastewater measurement.
- Technology that can stabilize sewage sludge from both biological nutrients removal and activated sludge plants. There are 600 activated sludge plants in Australia producing aerobic sludges that are difficult to dewater.
- Computer software capable of modeling water contamination (both ground and surface) from rural industries such as abattoirs.
- Chemically free technology designed to prevent biological fouling of cooling water for industrial applications.

Remediation
- Bioremediation.
- Soil washing.
- Thermal desorption.
- Soil vapor extraction.

Solid Waste Recycling
- Green waste recycling equipment.
- Automated separation systems and components.
- Rubber/tire shredding equipment.

Air Pollution Control
- Analyzing equipment
- NOx controls
- Odor control equipment.

Resources

Publications
- State of the Environment Australia: http://www.deh.gov.au/soe/
- Waste Management and Environment: http://www.wme.com.au/

Associations
- Australian Water Association: http://www.awa.asn.au/
- Environmental Business Australia: http://www.environmentbusiness.com.au
- Waste Management Association of Australia: http://www.wmaa.asn.au/
- U.S. companies seeking information on the Australian environmental market are encouraged to contact John Kanawati at the U.S. Commercial Service in Sydney (Email: john.kanawati@mail.doc.gov).

BRAZIL

Overview

Environmental experts estimate that Brazil's environmental technologies market (including equipment, engineering / consulting services and instrumentation associated with pollution control and cleanup projects) is valued at roughly $3.1 billion, of which $2.1 billion are related to the water and wastewater sub-sector. According to the Ministry of the Cities, investments in water treatment and distribution in 2004 were $380 million, whereas investments in sewage collection and treatment were $480 million. Investments in solid waste management technologies are estimated at $700 million, whereas investments in air pollution control equipment and services are $300 million.

Business opportunities for international companies in the Brazilian market are mostly in offering innovative solutions and technologies, rather than supplies.

Air Pollution

According to the industry magazine "Quimica e Derivados," the need to comply with the existing legislation on pollution emissions, the reutilization of raw materials and adoption of environmentally friendly policies, determine investments in air pollution control equipment and services. The magazine estimates this market to increase by about 20% per year. In addition to the industrial market, the increased number of CDM projects in sanitary landfills in Brazil is also creating demand for gas emission monitoring technologies.

Water Resources

Some of the critical segments in Brazil's water industry offer potential for international technologies, particularly in the areas of water loss and water reuse. The water loss rate in Brazil corresponds to 40 to 50% of the potable water produced in urban areas. Losses that result from inaccurate consumption metering and leakages are responsible for financial loss of about $5 billion per year. Opportunities include complete solutions related to water distribution systems, including services and equipment. Water reuse is becoming increasingly important in Brazil, especially in large centers where water scarcity represents high operational costs for water impounding and adduction. Recent legislation imposing charges for collecting and disposing effluents in water bodies increases the demand for specialized consulting services and effluent treatment technologies.

Waste Treatment

Although urban cleaning and public waste management services operated under municipalities, some major private sector companies participate through contracts or long-term concessions. In addition, there are several Brazilian manufacturers of solid waste treatment equipment. There are also a number of companies, several of them international, in the hazardous waste treatment business. Figures from ABRELPE, the Brazilian Association of Urban Cleaning and Hazardous Waste Collection and Treatment Companies, indicate that the sector generates annual revenues of $2.17 billion, has a fleet of 9,600 compactor trucks and invests $130 million in compactor trucks per year. Investments in sanitary and hazardous waste landfills are expanding significantly, as 90% of Brazil lacks sanitary landfills for waste disposal.

Although smaller than the public sector, the private sector is an important market

for pollution control technologies. Some of the driving forces affecting this market are stricter environmental legislation, pressure from communities and clients, the introduction of environmental management practices by a growing number of industries and increased number of industries with ISO 14001 certificates. The ISO 14001 certificate requires continuing improvement in production processes and adoption of pollution prevention measures. Industries in Brazil demand technologies for water reuse, solid waste treatment, recycling, CDM for greenhouse gases, etc.

U.S. companies generally export products such as soil/water contamination treatment equipment and services; healthcare waste treatment technologies; laboratory instruments; odor control products, recycling technologies, etc.

Resources
For more information about export opportunities in this sector contact US Commercial Service Industry Specialist Teresa Wagner at:
Teresa.Wagner@mail.doc.gov

CHILE

Overview
The U.S.-Chile FTA contains important provisions for U.S.-Chile environmental cooperation. The National Environmental Commission has completed most of the 8 environmental agreement points of the FTA. There are two projects that will be completed during the first semester of 2007, a project on remediation of mining pollution and closing of mining sites and a pilot project to retrofit a fleet of diesel trucks to demonstrate technologies and strategies to achieve significant emissions reductions. Addressing the enforcement of its domestic environmental regulations will be an ongoing process for Chile. Implementing its regulations will generate demand not only for pollution control equipment, but also for technical environmental engineering and consulting services. This is the situation in the water treatment sector.

Best Products/Services

Water Sector
According to Chilean regulation, all wastewater must be treated, either in house or through a water treatment company. This and other norms regulating discharge of industrial wastewater into the sewage system were published in the Official Gazette in September 2004. According to the Superintendency of Sanitary Services (SISS), the Chilean government office responsible for enforcement of this mandate, this overall effort will require an investment of $1.4 billion before 2015. Industry sources estimate that imported equipment accounts for approximately 20% of the total cost of new water treatment plants, and 80% accounts for local engineering supplies and civil works; this is reflected in the difference between total market and total imports.

Solid Waste Management
The solid waste management equipment and service sector is still a new market in Chile. There are a fairly limited number of companies that can handle solid waste and necessary capital resources remain scarce. The Metropolitan Environmental and Health Service estimate the Santiago Metropolitan Region alone generates approximately seven million tons of waste per year, 50% of which is residential waste. The municipalities are responsible for waste management.

Even though production of specialty equipment and technologies used in the treatment of solid waste is limited, the market will grow. U.S. companies may wish to develop long-range plans (5 to 10 years) for promoting their equipment and service in this sector.

Hazardous Waste

Chile's regulations for handling hazardous waste, approved in 2004, establish the procedure for identification and classification of hazardous waste and the standards for collection, transport, recycling, incineration and final disposal. The approval and implementation of these regulations should lead to investment in the market for hazardous waste handling. It is estimated that 5% of Chile's annual 2.5 million tons of industrial waste is hazardous waste.

Opportunities

Chilean production of specialty equipment and technologies used in water and solid waste treatment is practically nonexistent. Local environmental engineering and consulting companies are keen to partner with foreign companies that possess the necessary know-how and technical expertise, mainly in the following areas:

- Environmental impact assessment
- Project design and construction of water treatment plants
- Reclamation and remediation services
- Solid and hazardous waste management and disposal.

Clear environmental laws and a stable economy have allowed Chile to have a leading role in the region. Many of the Latin American countries follow the model that Chile is using or has already tested. As a result, Chile has become a platform country for the transfer of environmental technology and expertise to other Latin American countries.

Resources

- Chilean Environmental Commission (CONAMA): www.conama.cl
- Chilean Environmental Association (AEPA): www.aepa.cl
- For more information, contact Isabel Valenzuela of the U.S. Commercial Service Santiago at Isabel.Valenzuela@mail.doc.gov

COLOMBIA

It is anticipated that with the possible approval of the U.S.-Colombia Trade Promotion Agreement, compliance with the country's environmental regulations will be enforced, and industries will need to invest more in pollution control equipment and reduce current pollution levels. Nearly 25% of Colombia's population (10.5 million) lacks aqueduct services, and 40% lacks sewerage (16 million), especially in the rural areas. 97.4% of the urban population has potable water and 90.2% of the population has sewerage. For the country's rural areas the situation is different: aqueduct service coverage reaches 66.0% and sewerage coverage only reaches 57.9%. Colombia's Water Regulatory Agency (CRA) estimates that nearly 45% of the treated water (by the country's 1,800 water utilities) is not accounted for; it is produced but not paid for by the users or through losses in piping systems, therefore creating a large problem for utilities and users, hurting future investments.

Government sources estimate that the country needs to make environmental investments in the range of $3.3 to $3.4 billion per year to maintain an adequate level. The World Bank estimates annual investment needs in aqueduct and sewerage systems to be $700 million, or about $1.0 billion if wastewater treatment

plant needs are included. The Ministry of Environment, Housing and Territorial Development (MMA) considers that close to 80% of Colombian municipalities dispose of untreated wastewater into rivers or lakes. Colombia is a regional leader in the development and implementation of a wastewater pollution charge (tasa retributiva) but only a few environmental agencies have established regional funds to finance wastewater treatment facilities. Cities such as Bogotá and Medellin own wastewater treatment plants, and other cities such as Cartagena are developing an underwater outfall system with World Bank funding or are developing plans for other treatment systems, but funding remains a central concern. Medellin is developing plans for a new wastewater treatment plant that could cost some $300 million.

A major obstacle to the sector's growth is the current fiscal deficit that affects the availability of resources from the government budget and smaller investments from private entities. Most public sector funds are expected to come from transfers from the electric power sector, and the collection of royalties, taxes, and other contributions from the so-called "green markets". New financing arrangements for the private sector include new credit and tax incentives such as sales and income tax exemptions for environmentally sound technologies, new economic instruments and pollution charges, carbon dioxide sequestration options, and other stock market alternatives.

Best Products/Services

Best prospects include water and wastewater treatment plants, water pollution monitoring and control equipment, pumps, valves, solid waste hauling and disposal equipment, air pollution monitoring and control equipment, and environmental services (consulting). The operation and management of municipal services such as providing potable water and collecting, hauling and disposing of solid waste also offer good market opportunities for U.S firms.

Opportunities

The CRA is developing new regulatory methodologies to incorporate the cost of "unaccounted for" water, and the cost of sewage collection into end-user fees to allow for financing of large infrastructure developments needed throughout the country. In addition, the MMA is working on the incorporation of pollution charges to fund the cost of wastewater treatment plants. There are several projects with partial multi-lateral banks funding. Regulations regarding air pollution and solid and hazardous wastes are being developed at a time when public financing is almost non-existent, and enforcement has traditionally been lacking.

Resources

- CS Bogotá contact: Julio Carbó, Commercial Specialist (Julio.Carbo@mail.doc.gov)
- Ministry of Environment, Housing, and Territorial Development: www.minambiente.gov.co
- Coinvertir (Invest in Colombia Corporation): www.coinvertir.org
- Colombian Hydrology, Meteorology and Environmental Research Institute:www.ideam.gov.co
- Colombian Government: www.gobiernoenlinea.gov.co
- Water and Basic Sanitation Regulatory Comission (CRA): www.cra.gov.co

- Inter-American Development Bank (IDB): http://www.iadb.org/exr/country/eng/colombia/
- National Planning Department: www.dnp.gov.co
- The World Bank: www.worldbank.org

CZECH REPUBLIC

U.S. environmental technologies are highly competitive in the Czech Republic. The country's 2004 accession to EU was one of the main drivers for the introduction of new environmental laws. It is expected that by 2010, environmental investments in the Czech Republic will reach $10 billion. The Czech Republic has negotiated several transitional periods with the EU in which to fully comply with its requirements. Treatment of urban wastewater was negotiated until 2010, and air pollution from large combustion plants until 2007. Products and technologies helping the Czech Republic to comply with these requirements are in demand.

The EU's focus on recycling and re-use has also been introduced to the country in recent years, following an EU trend of creating in Europe a 'recycling society'. But while the level of recycling and composting has improved significantly in the Czech Republic in recent years, there is still a long way to go to achieve the levels typical in Western Europe. Recycling technologies should find an increasingly receptive market; however, competition from European companies will be fierce.

Best Products/Services

- Biodegradable waste treatment
- Recycling technologies
- Waste water treatment technologies
- Brownfield remediation

Opportunities

- $700 million allocated for the implementation of the Integrated Prevention & Pollution Control (IPPC) system by the year 2007. Over 1,000 enterprises need an Integrated Operating Permit.
- Czech Republic has committed to Kyoto Accord to reduce green house gas emissions (GHG) to 8% by the end of 2012. (Today, the Czech Republic is producing 25% GHG.)
- Prague Waste Water Treatment Plant upgrade.
- Project financing comes from various sources including the state budget, local government budgets, environmental funds, EU structural funds and from individual investors and entrepreneurs. With a Czech partner, U.S. firms can compete for EU funds.

Resources

- U.S. Commercial Service
  Ms. Veronika Novakova, Commercial Specialist
  Phone: (420) 257-022-434
  Fax: (420) 257-022-810 e-mail: Veronika.Novakova@mail.doc.gov

HONG KONG

Hong Kong has been putting a lot of resources toward tackling air pollution, water pollution and solid waste treatment problems. Owing to the imminent need to extend the life of existing landfills and construct a new Integrated Solid Waste Management Facility (ISWMF), solid waste management solutions and technologies will absorb most of the Government's investment in the environment in the next few years. An incinerator with the capacity of handling more than 5,000 tons of solid waste per

day will likely be the core component of the ISWMF. The majority of Hong Kong's wastewater undergoes primary treatment provided through the Harbor Area Treatment Scheme (HATS). Stage 1 of HATS was completed in December 2001. Stage 2A of HATS requires the provision of additional disinfection, the construction of sewage tunnels and expansion of existing chemical treatment capacity whereas Stage 2B requires the installation of biological treatment facilities. Although the Hong Kong Government has mapped out the future phases of HATS, it has no plans to start the project before 2008.

Hong Kong's air pollution problem is a regional one. The Government has been working with local power plants and the authorities in Guangdong (the province across the border) to cut emissions of major air pollutants before 2010. US companies should consider working with Hong Kong environmental companies to market clean manufacturing and desulphurization/denitrification technologies in Southern China.

Best Products/Services

Air:

- Analytical instruments
- Vehicle emission particulate reduction devices
- Desulphurization/denetrification technologies

Water/wastewater:

- Water filtration equipment (such as biological filtration)
- Disinfection technologies (UV, membrane & ozonation)
- Analytical instruments

Solid waste:

- Incineration
- Mechanical-biological treatment (waste sorting & separation)
- Biological treatment (composting)
- Waste-to-energy technologies

Opportunities

The Hong Kong Government announced a policy framework for municipal solid waste management in December 2005. The framework encourages waste separation & recycling, and only incinerating or sending the remaining to the landfill. This policy framework opens the huge waste reduction, recycling and treatment technologies market and represents outstanding business opportunities for US companies.

The market for industrial pollution prevention equipment has been increasing. Most of Hong Kong's manufacturers (estimated total of 80,000 industrial establishments) have shifted their production base to southern China. Traditionally, these manufacturers purchase plant and equipment from Hong Kong suppliers. Recently, the authorities in southern China have been encouraging these manufacturing facilities to recycle as much as 75% of its water consumption, and thus have created a rise in the demand for water reuse and recycling technologies. Recent attention to air pollution, combined with plans to develop regional emissions trading, improve prospects for air pollution and emissions reduction technologies.

Resources

Trade Associations:

- Environmental Contractors Management Association www.ecma.org.hk
- Green Council www.greencouncil.org
- Hong Kong Environmental Industry Association www.hkenvia.org

- Hong Kong Green-Manufacturing Alliance www.gmehk.net
- Hong Kong Sustainable Communications Association www.hksca.org
- Hong Kong Waste Management Association www.hongkongwma.org.hk

Hong Kong Commercial Specialist's Contact:
Olevia Yim
Email: olevia.yim@mail.doc.gov
Tel: (852) 2521-6166; Fax: (852) 2810-0970

ITALY

The Italian market for pollution control equipment and services offers good opportunities for U.S. firms. In Italy, the impact on the environment from waste generation and management is one of the major issues of the national environmental policy. Pollution continues to represent one of the most serious problems facing Italy. Waste disposal in Italy is still, at the national level, largely dependent upon landfills. The shortage of landfills has created extremely difficult situations in major Italian cities. The Ministry of Environment has implemented EU Directives 91/156 on waste, 91/689 on hazardous waste, and 94/62 and waste packaging. The Italian law is known as the "Decreto Ronchi". The Italian legislation simplifies procedures with top priority to waste minimization, reuse, recycle and recovery with the institution of a tariff system.

The Italian government, with the decree of July 2005 no.151, has converted into law the WEEE Directive 2002/96/CE and the EU Directive RoHs 2002/95/CE. The Directive on Waste Electrical and Electronic Equipment (WEEE) requires producers to recycle waste and electronic equipment. The Directive on the Restriction of Hazardous Substances (RoHs) bans certain hazardous substances in electrical and electronic products from July 2006. Producers are defined as companies that manufacture electrical or electronic equipment, resell equipment produced by other manufacturers, or import such equipment. The Italian decree came into force on July 13th of August 2005, but is expected to become completely operational in January 2007. The Italian Ministry of Environment has the responsibility for implementing the Decree Law and is working on various Italian sub-decree laws for its full implementation. The implementation of the EU Directive 2002/96/CE on the prevention, re-use and recycling of Waste Electrical and Electronic Equipment (WEEE) will most likely open potential market opportunities for U.S. firms, especially those engaged in waste management, recycling and waste recovery technologies, new product development and technological innovation.

Environmental services and equipment from the United States are highly regarded in Italy. As Italian industry is dependent on foreign expertise and know-how, good opportunities exist for American companies wishing to penetrate this market with advanced waste treatment technologies or sophisticated waste management services. Because of the high quality level of firms operating in this sector, the products and/or services should represent real innovation. Moreover, Italy's strategic location in the Mediterranean Basin makes it an ideal gateway to the emerging markets of Eastern Europe North Africa, and the Middle East.

Best Products/Services
The United States holds approximately 40% of the import market for pollution control equipment and environmental services. In Italy, U.S. technology and standards are highly regarded and good opportunities exist for innovative products and technology.

Best prospects in the air pollution control sector include: catalytic and non-catalytic denitrification systems for power plants; catalyzers for the oxidation of CO2; remote sensing equipment; testing and measurement instrumentation.

In the water treatment sector, the best prospects are: ozonation equipment; static mixers; filtering equipment for oils and thick liquids; membrane systems; tertiary water purification systems for dephosphorization, nitrification and denitrification; advanced chemical-physical urban wastewater treatment systems, sludge sterilization systems.

Best prospects in the waste/soil remediation sector include: general recycling equipment and technologies; tire recycling technologies; innovative waste-to-energy technologies, equipment for the treatment of chemical wastes (neutralizing, separating, stabilizing); hazardous slag and sludge treatment equipment; remediation technologies; analytical monitoring and processing equipment.

Opportunities
The implementation of the EU Directive on the prevention, re-use and recycling of Waste Electrical and Electronic Equipment (WEEE) will most likely open market opportunities for U.S. firms, especially those engaged in waste management, recycling and waste recovery technologies. The Italian Government has approved new legislation, which establishes the criteria, procedures and methods for safety and clean-up actions for environmental restoration of contaminated sites. The Italian Government has identified 40 Italian sites of "National Interest" in need of urgent clean up. It is estimated that at least 15,000 areas in Italy are currently subject to environmental investigation and remediation actions. Italy has enacted a "Water Safeguard Law," a comprehensive reform of Italy's water quality/discharges. Italy's water collection and distribution systems, as well as its urban wastewater sewage and purification systems are clearly inadequate. It is estimated that, over the next ten years, Italy will need to invest approximately $54 billion for water and wastewater treatment plants and equipment. Long-awaited water projects in Southern Italy will be implemented, facilitated by funding from the European Union.

Resources
U.S. Commercial Service Contact:
- Leonarda Chiocchi

Commercial Specialist
U.S. Commercial Service Rome
Tel. (39) 06.46742204
Email: Leonarda.Chiocchi@mail.doc.gov

- **Trade Shows**
  Tau Expo, January 2008, in Milan, Italy is a unique venue attracting all the major players on the market of environment preservation and alternative energy. The 4-day show brings together the swelling numbers of people seeking green-friendly technology and makers of fast-forward products. Urban planning and preservation of natural resources have become priority issues.
  http://www.fieremostre.it/

- **Ministry of Environment**
  Via Cristoforo Colombo 4400187 Rome
  TEL: (39) (06) 57221
  Fax: (39) (06) 57288513
  http://www.minambiente.it/st/default.aspx
- **Assoambiente** (FISE)
  (Association of Italian Environmental Service Companies)
  Via del Poggio Laurentino, 1100144 Rome
  TEL.: (39) (06) 5921076
  Fax: (39) (06) 5919955
  www.fise.org/area_associati/download.php

KAZAKHSTAN

Total imports of pollution control equipment in Kazakhstan in 2005 reached $161.5 million, an increase of 31% compared to 2004. U.S. imports represented 12% of the market in 2005, and are expected to increase significantly in 2006. Pollution caused by Kazakhstan's growing oil extraction operations is one of the country's more serious environmental problems. The most acute environmental problems include increased volume of liquid wastes, greater volumes of tailing deposits, leakage from abandoned oil-and-gas wells, and the disposal of associated gas. Additionally, over 21 billon tons of solid industrial and municipal wastes, including 237 millions tons of radioactive and 6.7 tons of toxic wastes, have accumulated in Kazakhstan. One of most serious problems is to clean rivers polluted with mercury and chromium in the northern part of Kazakhstan. In accordance with the government, the potable water program for 2002-2010 focuses on renovation and improvement of existing water supply systems, development of new and alternative sources of water supply, improvement of potable water quality, and rational use of drinking water. The major industrial wastewater polluters are mining and oil-and-gas industries.

Best Products/Services

- Technologies and equipment for oil-polluted soil remediation and oil spill clean up, which include equipment for oil spills collection and separation. Equipment for oily water treatment.
- Equipment for municipal waste processing and technologies for hazardous industrial waste collection, disposal, and treatment.
- Potable water treatment systems for small town and villages, compact systems for remote areas, water quality control and water rational use equipment.

Opportunities

U.S. companies with technologies for oil spills recovery and oil-contaminated soil remediation will find significant business opportunities in oil-and-gas projects implemented by state oil operators and multinational corporations. The best way for companies to enter the growing market for water treatment equipment and services is to cooperate with local water companies. Joint participation in government tenders for water projects is also recommended.

The environmental consulting market is expanding in Kazakhstan. Environmental consulting services for government and private sector projects are generally offered through competitive bidding. The most effective way to enter the market is to keep track of major projects financed by the multilateral development banks. As an example, the World Bank's current portfolio of the environmental projects in Kazakhstan includes two currently active projects and two proposed projects.

Currently active projects:
- Nura River Clean-Up Project ($40.4 million)
- Syr Darya Control and Northern Aral Sea Phase I Project ($64.5 million)

Proposed projects:
- Ust-Kamenogorsk Environmental Remediation Project ($34 million). The objective of the project is to contain the toxic waste plume contaminating the city's groundwater. Negotiations have been completed and consultants for a feasibility study have been selected. Other consultants will be needed for environmental impact and social assessments.
- Irrigation/Drainage Project. This is a $155 million project aimed at reducing land degradation and consequently the threat of desertification. Project preparation is under way and consulting services are still to be determined.

Resources
- Kazakhstan Water Partnership - http://atasu.org
- Ministry of Agriculture of the Republic of Kazakhstan; Committee for Water Resources -www.minagri.kz
- Ministry for Environmental Protection in Kazakhstan - http://www.nature.kz/
- Regional Environmental Centre for Central Asia - http://www.carec.kz/
- For more information contact Commercial Specialist Nurlan Zhagarin.

PERU

Overview
The Pollution Control Equipment sector in Peru totaled $89.9 million in 2005. The market is primarily served by imports, representing 92% of the market share in 2005. A 10% increase in total imports is anticipated for the coming years 2007-2008. U.S. products are preferred and ranked among main suppliers. In Peru, both the government and the private sector have operated without an adequate consideration of the pollution repercussions and the future risk for the population. Most Peruvian firms do not apply pollution control and related regulations. That explains why the Pollution Control Equipment sector is not growing as it should. Currently the foreign companies starting operations in Peru must follow their corporate pollution control policies and also demand their contractors to do so. The total market would be larger if the government enforced firms to follow the pollution control rules and develop strategic anti-pollution plans.

Most firms operating in the mining, oil and gas sectors as well as industrial firms must implement pollution control programs (PAMAs). New projects must submit Environmental Impact Assessment studies (EIAs). Additionally, the Manufacturer's Society, through the chemicals committee, following the Canadian initiative "Responsible Care", is developing and implementing the program "Responsible Conduct with the Environment" with the guidance and approval of the International Council of Chemical Associations. Details at: www.sni.org.pe/comites/comite013/e-p4.htm.

Best Products/Services
Best prospects include: filtering and purifying equipment for liquids and dust collection and air purification equipment. These products are mainly demanded for subsidiaries of foreign firms in order to meet international environmental standards.

Resources
- Customs: www.aduanet.gob.pe
- Manufacturers' Society: www.sni.org.pe

PHILIPPINES

Overview

Over the coming year and into the foreseeable future, the following issues will continue to spur demand for pollution control equipment:

- Stricter implementation of the Clean Air Act (CAA) of 1999, Ecological Solid Waste Management Act of 2000, and other environment-related government programs and policies;
- Projects that address the following pollution-related problems:
  - Deteriorating air quality that is impairing the health and welfare of a large portion of the country's population. The concentration of several dangerous pollutants has reached critical levels and the primary causes of air pollution --- vehicles and industrial processes -- continue to expand rapidly;
  - Solid waste disposal problems. Waste generated in the Philippines is estimated at 17,871.53 MT per day. Projections show that waste generation will increase 47% by 2010, or 26,194.95 MT per day. Metro Manila alone needs a new landfill that can accommodate 6,000 MT of garbage daily. Open dumping is still the most common waste disposal method as controlled dumpsites and sanitary landfills (SLFs) are very limited;
  - Increasing hazardous waste and limited facilities to treat hazardous waste.

Best Products/Services

- Parts of filtering/purifying machinery for gases to supply to Philippine companies that fabricate air pollution control equipment;
- Monitoring and measuring technologies, such as Continuous Emission Monitoring Systems (CEMS);
- Recycling equipment;
- Products/Equipment for sanitary landfills and other disposal facilities.

Opportunities

The following present sales opportunities:

- Solid waste management projects of local government units funded by government financial institutions such as the Development Bank of the Philippines (DBP) and Land Bank of the Philippines (LBP). Projects eligible for funding include facilities for waste treatment and recycling, conversion of controlled dumpsites into sanitary landfills and construction of sanitary landfills, including acquisition of equipment for waste disposal and treatment.

- Projects/activities funded by the Air Quality Management Fund (a provision of the CAA). Projects eligible for fund assistance include air quality monitoring, reporting or management including purchase and maintenance of equipment, public awareness campaigns on air quality, research on air pollution-related issues, and capacity building on air quality management.

- Projects of Philippine companies to be able to comply with the provisions of the CAA.

Resources

- Asian Development Bank: http://www.adb.org; http://www.buyusa.gov/adb
- Department of Environment and Natural Resources: http://www.denr.gov.ph
- Department of Interior and Local Government: http://www.dilg.gov.ph
- National Economic and Development Authority: http://www.neda.gov.ph

- National Solid Waste Management Commission: http://www.denr.gov.ph/nswmc

- Bebe Montesines, Commercial Specialist U.S. Commercial Service Manila
Email: Bebe.Montesines@mail.doc.gov, Manila.Office.Box@mail.doc.gov

SINGAPORE

With the accession to the Kyoto Protocol, Singapore is committed to cutting its greenhouse gas emissions by about 5% of its 1990 levels by the target date of 2012. With that in mind, Singapore has enhanced its anti-pollution and energy efficiency measures. These measures are likely to have significant impact despite the steady rise in motor vehicles on the roads and the growth in electricity generation. One vital element has been the switch to natural gas from oil in electricity generation; it is estimated that the conversion of the Senoko power plant, when completed, could cut greenhouse gas emissions by 2.5 million tons per year.

Government development spending on environment and water resources has grown to five times its 1990 level, from $134 million to over $641 million today. Measures that have some impact on greenhouse gas production have included the effort to encourage recycling of waste, targeted to reach 60% by 2012 (compared to 40% in 2000); investment in better insulated and less energy-hungry buildings in public sector; the voluntary labeling scheme indicating the energy consumption levels of air conditioning and refrigerator units to help the public make better-informed decisions; and encouragement of more eco-friendly vehicle use through a "green vehicle rebate."

At present, Singapore appears to be more interested in solar panel technology as a potential future export-geared business than a supplementary energy provider. Singapore's wind and water power potential are negligible. Singapore is fast becoming a global player in the water industry. Singapore's water industry is now the biggest component of Singapore's environmental services sector, accounting for about 40% of the sector. The water industry is singled out as a new growth area where Singapore will focus its R&D.

Best Products/Services
Upon the completion of the review of the Singapore Green Plan 2012 (SGP 2012), the Ministry of Environment and Water Resources set up action program committees to implement the initiatives of the updated SGP 2012, which includes initiatives for waste management and the improvement of public health. The measures taken to tighten air emission will give rise to opportunities to supply new air pollution control equipment to Singapore. American products will have good market prospects, given that imports of environmental products from the U.S. account for about 27% of total environmental imports.

Among the American products imported by Singapore are air filters and water purifiers, gas and smoke analysis apparatus, and ozone oxygen & herosol therapeutic respiration apparatus. Other areas of environmental interest include waste management because of limited land space. Singapore has been tapping into foreign expertise for technologies such as hazardous and solid waste disposal, landfill, and incinerators.

Opportunities
The water industry in Singapore is becoming more liberalized. The national water agency, the Public Utilities Board (PUB), has opened its doors to private companies that want to test-bed projects using its infrastructure. PUB also tenders contracts to private companies to build, design and operate water plants. U.S. companies are encouraged to participate in future contracts offered by the PUB. American equipment manufacturers could also supply their equipment to the successful prime contractors of PUB projects. Areas of particular interest include filtering and purifying machinery and apparatus, technologies involving wastewater recycling and treatment, and modular wastewater treatment systems.

Resources
Trade Show
Enviro Asia 2007
Nov. 27-30, 2007
http://www.enviroasia.com.sg
Singapore Government Offices
- Ministry of the Environment & Water Resources www.mewr.gov.sg
- National Environment Agency http://www.nea.gov.sg
- Public Utilities Board http://www.pub.gov.sg

U.S. Commercial Service, Singapore
NG Haw Cheng, Commercial Specialist
Email: Hawcheng.Ng@mail.doc.gov

SPAIN

The world environmental market is concentrated in three main areas: the United States, Europe and Japan. The United States represents 40% and Europe, 32% of the market. This high percentage is mainly due to the early development of European environmental norms and the complementary administrative control. In Spain, as in most European Union (EU) countries, the environmental sector is governed by the EU regulations. The Spanish environmental market is worth almost 3% of the worldwide environmental market and 9% of the European environmental market. Spain has one of the fastest-growing economies in the European Union, and over the last two decades has become the eighth largest economy in the OECD. This growth has placed even greater pressure on the environment in terms of the use of natural resources (e.g. water and oil) and pollution. Other European countries respect Spain for its economic prosperity, shown by the 3.5% economic growth in 2005. Spanish government policy includes increasing the environmental budget to promote environmental protection. The 2006 budget increased almost 12% from the previous year, to nearly $4.3 billion.

Best Products/Services
Demand for equipment, technology and services are high from both the government and private sector. To meet growing water demand, the Spanish Government is undertaking a large public works program that will change its national water system, significantly increasing the number of desalination plants. This multi-billion euro program will be partly funded by the European Union. Opportunities exist for U.S. engineering and water treatment equipment and service firms.
Fines are imposed on contaminating industries through the central, regional and local governments. These penalties force Spanish industries to look for environmentally safer technologies and pollution control equipment to treat emissions and industrial waste. As a result, opportunities exist for U.S. environmental companies in this market.

Opportunities
Resources allocated during recent years underscore Spain's commitment in this sector. The Spanish Government's environmental budget is more than $4 billion. The Spanish Ministry of Environment estimates that the environmental market in Spain has grown an average of 14% in the recent years. Public investment will concentrate on water projects. Investment in conventional water infrastructure is decreasing, counterbalanced by increases in treatment, re-use and desalination projects as well as natural environment protection. The highest priority is given to urban uses, followed by the ecological needs of aquatic ecosystems.

The previous Spanish national water plan, the 2001 "Plan Hidrológico Nacional" (National Hydrological Plan), was intended to bring water from well-supplied northern areas of Spain to those most affected by drought and expansion of demand. This plan was partially revised when the Spanish Government changed in 2004. Some environmentalists had objected to the 2001 plan, which would have built dams in many untouched areas of the Spanish countryside. Moreover, the European Parliament opposed funding; arguing the original plan contradicted some existing objectives of the European Union pertaining to water usage.

The present government developed a new program called "Programa A.G.U.A," (Actuaciones para la Gestión y la Utilización del Agua - Water Management and Use Actions), which will replace some of the actions initially planned in the 2001 Hydrological National Plan. The A.G.U.A. Program intends to obtain water from rivers and the ocean, as well as to a better re-use of treated wastewaters. Over 20% of the projected actions under this program are desalination projects. Almost 50% of the water resulting from the A.G.U.A. Program will come from desalination; over 20% from wastewater re-use actions, 15% from irrigation systems modernization and 15% from other efficiency improvements. The A.G.U.A. Program predicted cost for those interventions are $4.9 billion, out of which the European Union will finance 33%. A National Irrigation Plan (PNR), to take place from 2001 to 2008, will have a budget of $6.3 billion for improving water efficiency. Irrigation accounts for 80% of total water consumption in Spain, which has the largest irrigated acreage of any EU country (33,400 Km^2). Therefore, it is logical that efforts increase in more sustainable use of water. This plan addresses the modernization of existing irrigation systems, involving 2,400 Km^2 of needy rural areas, infrastructure and equipment. In each autonomous region, the regional government will decide the new location of the irrigation land. One PNR objective is to reduce water losses by 2.7 billion m^3 per year, compared to the current total growth water demand of 23.5 billion m^3.

Spain has also taken many steps to deal with air pollutant emissions and reinforce its air quality management system. The Ministry of Environment has approved a new plan called "Vehículos Fuera de Uso" (VFU) (Obsolete Vehicles) for the period 2001-2006. For its execution, a total investment of 263 million euros has been anticipated, to establish the suitable management of vehicles, decontamination, reusability and automobile-waste recycling. The VFU Plan fulfills both Spanish and EU legislative mandates in this area. Most of this investment will be undertaken by the private sector, in

application of the principle of responsibility of the producer and the regulating European Directive 2000/53/CE re-management of this type of residual.

The European Union has taken measures to restrict the use of certain dangerous materials used in a large number of types of electrical equipment. Spain has passed echoing legislation regarding to Waste Electrical and Electronic Equipment (WEEE) and Restriction of Use of Certain Hazardous Substances (RoHS) issued on January 25, 2005. This legislation applies to manufacturers, importers, distributors and users of all categories of electric and electronic equipment. Its aim is to require the safe elimination or reusability of electrical equipment. The directive went into full effect on July 1, 2006, banning lead, mercury, hexavalent chromium, cadmium, polybrominated biphenyls (PBBS) and polybrominated diphenyl Ethers (PBDES), all of which are deemed to present risks to the environment and public health during the process of manufacturing or the final elimination of the product. Many companies will be forced to make their products with substitute materials.

Concerning nature and biodiversity management, Spain is intent on following the new Red Natura 2000" (Natura 2000 Network) program applicable to all EU members. This program foresees 25% of the territory of Spain and Europe being protected. In the case of Spain, municipalities will be in charge of nature management, leading to an increase in the total amount of protected areas. The protected areas in Spain represent 9.6% of the territory, in comparison with the OECD average of 14.6%. Although Spain has increased the areas protected by more than the half between 1994 and 2001, with this new plan Spain will have a major participation in nature conservation.

Spain has adopted specific environmental plans and developed many ecological laws and regulations in line with EU environmental directives since 1993. In addition to the central government, 17 Spanish autonomous or regional governments issue environmental laws and regulations that are mandatory for their territories. The regional governments incorporate laws issued by the central government as well as EU directives. Giving responsibility to autonomous regions and municipalities should facilitate the implementation of environmental policies and help build public support. It should also increase cost-effectiveness by allowing differentiation in standards to reflect differences in ecosystems and use of natural resources.

Resources

- Spanish Ministry of the Environment: www.mma.es

Other sites of interest:

- www.ambientum.com
- http://waste.ideal.es/Indice.html
- www.infoambiente.com/
- www.europa.eu.int
- www.empresasostenible.info
- www.aquieuropa.com
- Commercial Service Spain: www.buyusa.gov/spain

SOUTH AFRICA

In 2006 three major issues dominated the South African Government's environmental efforts:

- . The implementation of the updated and stricter South African Air Quality Act,
- Regulation of the use of leaded vehicle fuel, and

- Enforcement of regulations on management of hazardous waste materials (particularly asbestos).

The South African Air Quality Bill of 2005 places increased responsibility on heavy industries in South Africa to actively address emission issues.
The South African Government plans to use technological advances to identify the main contributors to air pollution in South Africa and to hold these industries and individual companies responsible for their emissions.

Government officials have recently stated that South Africa will commit itself to reducing its greenhouse gas emissions by an average of 5.2% between 2008 and 2012, in line with Kyoto Protocol adopted in February 2005. Hazardous waste management is also very topical, and the South African Government proposed far reaching legislation on the banning of asbestos products and by-products in 2006. Active consultations are also being held on rehabilitation of asbestos and other hazardous waste dumping sites, including gold mine dumps and hydrocarbon waste clean up. Significant demographic pressure on water resources has led to increased attention being paid to water management systems, ranging from water supplies to filtration, recycling and pre-paid metering systems. Efforts by municipalities to address these matters are a cornerstone of meeting the basic needs of rural and peri-urban dwellers. At the same time, industrial water users are looking at the sustainable management of water.

Best Products/Services
- Air Pollution Control and Monitoring
- Waste Water Recycling and Treatment Plants
- Hazardous Material Containment and Management
- Residential Solid Waste Management Technology.

Opportunities
The Air Quality Act will ensure a well-defined need for large, South African industrial groups to implement emission management and monitoring equipment. There is a definite opportunity for extensive implementation of emission filters and cleaner production technology to assist the large air polluting industries in South Africa to reach their emission limitation targets as set by the South African Government.

Air Pollution Management Equipment
Monitoring technology to measure emission levels in different industrial zones.

Hazardous Waste Management
An opportunity for U.S. companies exists in treatment of hazardous waste sites, containing chemical and hydrocarbon spills and cleaning and rehabilitating asbestos and gold mine dumping sites. The South African Government is also looking at a road freight management system that will monitor hazardous material shipments and end-use compliance.

Residential and Solid Waste Management
The implementation of so-called integrated waste management plans and policies by municipalities will create opportunities for U.S. suppliers of relevant products and services. In the short and medium-term, areas of opportunity exist in the provision of residential solid waste technologies and rehabilitation equipment to assist local municipalities to manage their solid residential waste, including

transformation into reusable by products, such as fertilizer.

Resources

- Department of Environmental Affairs and Tourism Website: www.environment.gov.za
- Department of Trade and Industry Website: www.dti.gov.za
- Department of Water Affairs and Forestry Website: www.dwaf.gov.za
- Water Research Commission Website: www.wrc.org.za
- U.S. Embassy - U.S. Commercial Service Johan van Rensburg, Commercial Specialist – Safety & Security Heather Byrnes, Commercial Officer Johannesburg, South Africa Tel: +27 (0)11 778 4815; Fax: +27 (0)11 268 6102 Email: Johan.van.Rensburg@mail.doc.gov, or Heather.Byrnes@mail.doc.gov http://buyusa.gov/southafrica/en

SWEDEN

The environment is one of the most important issues of our times. Sweden was among the first countries in the world to recognize the growing environmental problems. In a recent ranking by researchers at Columbia and Yale universities, Sweden came out as second best on a list of 130 countries that do most for the environment. Swedish environmental technologies and services firms are active in the areas of air pollution, water and wastewater treatment, waste management and recycling. Domestic suppliers of pollution control equipment are strong and world leaders in their respective field, but they look for new development in R&D and the application for new techniques. American products enjoy a good reputation on the market but will find strong competition from both domestic firms as well as third-country suppliers.

Best Products/Services

According to trade sources, the market for water treatment control is mature and well covered, while best sales prospects may be found in products and services related to air pollution control, soil remediation and waste management products/techniques.

Resources

Trade Shows:

- Elmia Waste & Recycling, May 2008 www.elmia.se
- Eco-Tech Scandinavia, October 2008 www.swefair.se

Contacts:

- Commercial Service Trade Specialist Catharina Kronstrom catharina.kronstrom@mail.doc.gov
- Ministry of the Environment www.miljo.regeringen.se
- Swedish Environmental Protection Agency www.environ.se
- Swedish Recycling Industries' Association www.recycling.se
- RFV – The Swedish Association of Waste Management www.rvf.se
- Varim - Swedish Association of Suppliers of Effluent and Water Treatment Equipment www.varim.se

UNITED ARAB EMIRATES

In recent years, the UAE has taken significant steps to protect the environment. These include:

- Establishment of the Federal Environmental Agency (FEA) in 1993;
- Creation of the Environmental Agency for Abu Dhabi (EAD) in 1996;
- Establishment and the full implementation of the UAE Federal Environmental Law 24 of 1999;

- Adoption of programs by municipalities for better environmental practices;
- Creation of separate entities by the major industrial institutions for the protection of the environment;
- The treatment and disposal of solid and medical waste, treatment of wastewater, and several other initiatives.

Considering the vast commercial and industrial developments and a population increase of approximately 10%, which puts more demand on the country's resources, the UAE is expected to invest several billion dollars over the next decade in environmental and pollution control projects. These projects are linked to the oil and gas industries, conservation of water and power generation, waste management, land management and air pollution.

The UAE production of water is approximately 510 million gallons per day of which 80% is desalinated seawater. An estimated $5 billion will be spent on improving water resources in the coming years because the need for water in general and desalinated water in particular, will triple to 713 million gallons per day by the year 2015.

Nearly all of the wastewater in the Emirate of Abu Dhabi is treated and used to turn large areas of desert into green areas. Almost half of the wastewater in the northern emirates is also treated and used for irrigation. The Emirate of Abu Dhabi is in the process of privatizing the wastewater treatment plants. Treated wastewater is used in fish hatcheries, farms, municipal and commercial sewer systems, as well as industrial toxic waste treatment. The resulting sludge is disinfected and used as a natural fertilizer. Wastewater ozone treatment systems support a wide range of activities, from reduction of biological waste to complete purification and sanitation as required by drinking water quality standards. Industrial firms vying for ISO accreditation rely on water recycling as an important step forward in their march towards environmental friendliness.

ADNOC and its group of companies are addressing vital environmental issues under their new Health Safety and Environment (HSE) policy and objectives. These include elimination of hydrocarbon flaring, abolition of continuous venting of hydrocarbon disposal, optimization of land use and energy resources, and re-injection of produced water and other effluents. HSE also examines ways to minimize the use of oil-based muds and the disposal of drilling muds and cuttings, so as not to contaminate the environment. It also looks at reducing and controlling solid and other wastes, including treatment and disposal as per international standards. Most importantly, HSE not only plans the clean up of oil and chemical spills, but also work to prevent them.

The UAE generates approximately 561,000 tons per day of solid waste, which includes household, commercial, industrial, animal, agricultural, and medical waste. Abu Dhabi Government is investing $84 million in a Solid Waste Management Center, which will be maintained and operated by the private sector. More than 40% of UAE municipal solid waste can be recycled and reused. An additional 30 to 40% of the waste can be made into compost and used as fertilizer. Currently, there are five compost plants in the UAE. The Abu Dhabi Municipality has contracted two companies for the private collection and transfer of solid waste and will be contracting two more in the near

future. The northern emirates also have plans for investing in upgrading and improvement of its solid waste management.

A Royal Decree was recently issued on medical waste from hospitals in Abu Dhabi. The decree calls for a total ban on the disposal of medical waste in containers not designed for this purpose. It stipulates that all health centers should separate their medical waste from other waste material, then dispose of it in specially designed containers supplied by the municipality. Approximately 11 to 13 tons per day of medical waste, including infectious and non-infectious wastes, are generated in the UAE. It is worth mentioning that several new government and private hospitals are in the pipeline.

Air pollution in the UAE is mainly due to power generation and transformation plants, vehicles and industrial emissions. The number of cars in the emirate of Abu Dhabi alone has increased from 40,448 in 1991 to 98,589 in 1995 and it is expected to reach approximately 300,000 by the end of 2005. Based on a resolution by the Higher Council of Leaders of the Gulf Cooperation Council (GCC) issued in December of 1998, the UAE phased out leaded gasoline and replaced it with unleaded gasoline, which came into effect in early 2003. Vehicles that were equipped for unleaded gasoline had two options, either use the unleaded gasoline with special chemicals added to it to make it useable or add catalytic converters to their cars. By 2007 all vehicles in the UAE should either have catalytic converters or be equipped for unleaded gasoline.

The UAE is well known for the construction of building towers. Buildings that are 15-20 years old are knocked down and replaced by new, taller ones. Dust resulting from the demolition of old buildings is enormous. However, the used iron bars are recycled by smelters in order to be re-used while cement fragments are crushed and treated for reuse in landfill operations.

The Federal Environment Agency and the General Secretariat of Municipalities spend millions of dollars annually on environmental feasibility studies, awareness campaigns and development of human resources for carrying out environmental missions. Article 4 of the UAE Federal Environmental Law #24 mandates that the implementation of any project in the UAE requires an Environmental Impact Assessment (EIA) to ensure that the project does not adversely affect the environment. An application for an environmental permit has to be submitted for any proposed project by the project proponent/owner to the Environment Agency of Abu Dhabi (EAD), which will decide whether the project needs a comprehensive EIA, a limited EIA or no EIA. Once it is decided that an EIA is needed, the project proponent (or his consultant) has to prepare the EIA scope of work. The latter will be reviewed by EAD, which approves the project based on the review of the EIA study report. EAD will also oversee the implementation of the EIA recommendation. A law is currently being drafted for the emirate of Abu Dhabi whereby all EIAs should be carried out by only pre-qualified consultants. EAD has been tasked to pre-qualify environmental consultants.

There is minimal local production for environmental protection equipment and supplies in the UAE. However, water pipes, fertilizers, cement, paper products,

nylon bags, valves, and other items are locally produced.

US manufacturers and exporters enjoy an excellent reputation for product technology, quality and durability and US market share is expected to increase. US companies face tough competition from the Europeans in the UAE, who generally have offices here and travel frequently to the region. Providing after-sale maintenance services is essential and US companies are advised to establish a presence in the UAE to be able to compete. In general, US companies with a manufacturing presence in the UAE and the GCC are most likely to be able to compete in the UAE market, given the relatively low cost of production.

The UAE enjoys a free trade market system. An over-the-board custom duty of 5% applies to all imports with the exception of a few items. There are no restrictions on foreign exchange and money transfer operations.

Best Products/Services

The most promising sub-sectors within this sector, with the estimated 2005 Total Market Size of each in millions of US dollars:

- Wastewater 190
- Solid Waste 95
- Medical waste 25
- Air pollution 10

Opportunities

Dangerous Waste Residues Management Project: Abu Dhabi-based refining company Takreer is undertaking a $47 million project for ADNOC and its Group of Companies that involves the effective disposal of waste. The project will manage all the dangerous waste products produced by ADNOC & its Group of companies by utilizing the latest technologies for treatment of hazardous waste in accordance with international standards. The project consists of establishing a complete hazardous waste treatment facility. A specialized warehouse for all waste treatment is also under consideration. The new operation will rely heavily on stabilizing and neutralizing the negative effects of solid waste through chemical treatment by combining such wastes with cement to produce concrete blocks that can be buried in a safe manner, at varied depths. The second method consists of segregation of water from hazardous residues through a high technology process. The third method is built around burning solid waste in a high temperature furnace, in order to destroy all hazardous organic material present in the waste. This method helps to dispose of hazardous material such as mercury that is in light bulbs.

Emirates of Sharjah Waste Recycling Project: Sharjah Municipality is building an environmental village to recycle waste that will include recycling plants, construction and demolition sites and a materials recovery facility in which waste can be segregated. Most of Sharjah's waste will be dealt with at the site. Construction started in May and is expected to be finished in the coming year. Some more specialized units at the site will focus on tire recycling and medical-waste treatment with high-temperature sterilization equipment. Meanwhile, liquid waste treatment ponds will allow for the recovery and processing of sewage sludge so it can be used as compost. A leach ate collection plant will send water through waste material to take out some of its soluble parts. There will also be two evaporation ponds for the treatment of hazardous industrial waste; deep tanks

built with a design that removes any risk of contaminating the ground water; and two liquid-waste evaporation ponds. Waste specialists from Austria, under a company named Emirates Environment Technology, are building the village.

Ras Al Khaimah Central Sewage System Project: A $35.4 million contract for the first phase of the $81.7 million central sewage system has been awarded to Jog Union Engineering LLC by the Ras Al Khaimas Sewage Authority on behalf of the emirates government. Negotiations for the second and third phase are ongoing. Halcrow is the consultant for the project. The full capacity of the plant will be 60 million litres per day. This is the highest quantum of waste that this emirate is estimated to generate by 2030. The new central sewage system will be financed by a loan taken by the emirate's government from the Commercial International Bank. Sources at the emirate's Emiri Court said residents will be charged one-fourth the cost of their water consumption as sewage fees, and that fee will be automatically added to the monthly water and electricity bills. Once the laying of the 450-km sewage pipelines of the first phase is completed, the owners of houses and commercial firms will be required to pay connection fees that will be fixed later by the Sewage Authority.

Refuse Enclosure for the Umm Al Quwain Emirate: The Emirate of Umm al-Qaiwain has signed a contract with a private company to build a garbage disposal enclosure of an international standard at a cost of $1.4 million. The project will be built on a 400m x 600m area.

Ajman's Sewerage Project: The emirate of Ajman is constructing a $140.2 million sewerage treatment plant to be completed in 2007. The project is regarded as one of the biggest ventures ever undertaken in Ajman. It will eventually comprise of a main treatment plant on the outskirts of the city, and 22 individual and mostly underground pumping stations, apart from 250 km pipeline network to connect properties to the system. Each property owner in Ajman is required to contribute to the construction of the network through payment of a connection fee, which will depend on the size of the individual property. Ajman Sewerage (Pvt) Co. Ltd. will finance, build, operate and manage the new collection network comprising over 22 pumping stations, 225 km of gravity pipeline and 30 km of pumping mains. The system also includes a new 49,000cm a day wastewater treatment plant. Total cost of the project is $140 million of which about $26 million will be covered by equity, $80 million by a loan from a group of four banks and the balance by advance payments of connection fees.

Jebel Ali Sewage Treatment Plant: Dubai Municipality is planning a $136 million project to expand it sewerage treatment capacity through a new grassroots treatment plant at Jebel Ali, along with a proposed expansion of the existing Al-Aweer plant. The scope of work for Phase I will include a capacity of about 250,000cm a day (cm/d). Three further phases are planned at the site, which will take overall capacity to 1 million cm/d. Montgomery Watson has been appointed as the consultant for the Jebel Ali plant. First-phase designs are expected to be completed late this year, after which tenders will be issued. Construction is scheduled to take three-four years. Dubai’s existing treatment plant at Al-Aweer may also be expanded.

Montgomery Watson is carrying out a feasibility study focusing on expanding the plant and improving its efficiency. The plant was last expanded in 1998, with capacity increasing to 260,000 cm/d.

Abu Dhabi Solid Waste Management Project: The Higher Corporation for Special Economic Zones is planning the implementation of a solid waste management project estimated at $81.8 million in joint venture with foreign firms. The project will be based in the Abu Dhabi Industrial City. Globex City Consultant completed the initial project design.

Dubai Waste Recycling Plant: Dubai Municipality signed a 52 million 20-year BOT agreement with Aqua Engineering Company in Q3 2004 for the construction of a new plant with capacity for processing 4,000 tones a day of domestic waste; recycle waste to reuse it as raw material to manufacture goods such as plastic balls and wooden boards. There is also an option to double capacity after initial construction. The project is expected to be completed in 2006.

Sharjah Wastewater Treatment Phase 6 Project: The Project is estimated at $25.9 million and it includes the installation of a new treatment unit, demolition of certain facilities built under the fist phase, relocation of a pipe rack, new inlet works, construction of a pumping station and a substation. This project will increase the plant capacity to 140,000cm.

Ras Al Khaimah Solid Waste Management Project: Ras Al Khaimah Municipality solid waste management project is being implemented by Ceres Inc of California. The project includes design, installation, and commissioning of a recycling center and material recovery facility.

Nakheel Water Treatment Plant: Istithmar, the investment company of Nakheel has signed a contract with Hyflux for the construction of new water treatment plants in Dubai worth $400m. The work scope includes construction and operation of wastewater plants. Hyflux will design, build and operate wastewater plants for Nakheel over the next three years.

Resources

- http://www.ee-uae.com/ (Environment Exhibition and Conference – one of the biggest shows in the region)
- http://www.fed.gov.ae/\ (UAE Federal Environmental Agency)
- http://www.erwda.gov.ae/ (Environmental Research and Wildlife Agency)
- http://www.adm.gov.ae/ (Abu Dhabi Municipality)
- http://www.dm.gov.ae/main.html (Dubai Municipality)
- http://www.shjmun.gov.ae/ (Sharjah Municipality)
- http://www.rakmunicipality/ (Ras Al Khaimah Municipality)
- http://www.datamediasystems.net/ (Data base for updated list of projects in the UAE) Commercial Specialist: Rula Goussous Omeish P.O. Box 4009 Abu Dhabi, U.A.E. TEL: 971-2-414 2304; Fax: 971-2-414 2228 *E-mail: rula.omeish@mail.doc.gov*

VIETNAM

As a result of rapid economic development, population growth, and urbanization, Vietnam faces significant environmental challenges. In 2006, Vietnam's pollution “hot spots” included

solid waste, water and air pollution, with water pollution and solid waste treatment being the biggest challenges for the Ministry of Natural Resources and Environment (MONRE). According to MONRE, Vietnam's environmental situation is deteriorating due to a lack of Governmental resources to address these issues.

Best Products/Services

Equipment and services for municipal water supply and wastewater treatment: According to Vietnam's Ministry of Construction, only 200 of the country's 689 cities provide clean drinking water through central municipal treatment plants. These potable water treatment plants have an average capacity ranging from 500 to 3000m3/day. Two-thirds of the potable water is derived from surface water and one-third is from underground sources. At the above production rate, only 60% of the population has access to clean water. Meanwhile, the average rate of clean water leakage in urban areas is 36% and reaches 50% in some places. In order to improve this situation the Government issued a development plan for water supply with the objective of providing clean water for 80% of the population by the year 2010. The Vietnam Water Supply and Sewage Association (VWSA) estimates that total investment for water supply projects will be more than $2 billion over the next ten years. Pollution levels in surface water and ground water are another critical concern of the Government. According to new research by the Department of Natural Resources and Environment in Ho Chi Minh City, total organic carbon (TOC) content of groundwater in some places is 31-86mg/l. Biochemical oxygen demand (BOD) of some large rivers supplying water to municipal water treatment plants is higher than 5mg/l. Meanwhile, all drinking water treatment plants in Vietnam lack the ability to reduce BOD levels. In order to upgrade the current treatment process in Ho Chi Minh City alone, the Government must invest $133 million per year for the next five years, which represents one% of the city's GDP.

Domestic Wastewater: Drainage and sewage problems also represent a growing concern. Vietnam's rapid urbanization and industrialization over the last ten years have placed huge demands on its outdated sewage systems, much of which were constructed in the 19th century. Most drainage systems are for combined usage, mixing rainwater runoff with untreated domestic wastewater. At present, except for Ho Chi Minh City, Can Tho and Danang, which have projects underway, to collect domestic wastewater for treatment, none of the cities or provinces within the country has a centralized wastewater treatment plant.

Industrial wastewater: Industrial wastewater is also having a negative impact on the environment. Throughout the country, there are 74 operating industrial zones (IZs), four of which are export processing zones and another two being high-tech parks. According to a 2004 Government report, only 15 IZs have centralized wastewater treatment plants. In Ho Chi Minh City, only five out of 15 IZs & Export Processing Zones (EPZs) have established wastewater treatment systems. This has resulted in the direct discharge of untreated industrial wastewater into the environment. However, responding to the lead of good corporate citizenship standards practiced by many multinational corporations, this problem is drawing greater attention from both the Government and private sector.

City authorities have decided to relocate industrial polluters from residential areas to regulated zones or industrial parks.

To help local businesses with relocation efforts, financial assistance programs have been launched under the Environmental Revolving Fund and the Development Assistance Fund, which should attract more pollution control equipment investment in the coming years.

Domestic solid waste: Another great concern is the mass accumulation of solid waste in the country. According to the Ministry of Natural Resources and Environment, more than 20,000 tons of solid waste is generated in Vietnam each day, of which 6,000 tons is generated in Ho Chi Minh City alone. Up to now, burying domestic solid waste at landfills has been the only treatment method used in Vietnam. In Ho Chi Minh City, there are three landfills under operation and another is planned. However, only one of these three landfills has a treatment facility for wastewater leakage. The leach ate from the other landfills is causing severe pollution to underground water in the surrounding area. Several American companies are now pursuing investments in solid waste treatment facilities in Ho Chi Minh City and other parts of the country. Three major projects proposed by American firms have already received Vietnamese Government approval. Hazardous solid waste from factories and hospitals: Except for solid waste from hospitals that is collected and burned in a controlled environment, most industrial waste is still disposed of together with domestic waste without proper treatment. Currently, there is no industrial waste management and control system in place in Vietnam. Contamination from pesticides and agricultural chemical runoff is growing at an alarming rate.

Opportunities

American technology is considered the leader in environmental equipment and technology. Vietnam currently has a huge requirement for equipment, technology and services, thus American environmental companies will find numerous opportunities to export their products and services to Vietnam.

Resources

Information relating to environmental projects can be collected by working with the Ministry of Natural Resources and Environment / Division of Environment and the Environmental Protection Agency of every city.

Further information on environmental projects can be obtained from the U.S. Commercial Service in Ho Chi Minh City and Hanoi via the following addresses and website:

- Ms. Ngo Anh, Commercial Specialist U.S. Commercial Service U.S. Embassy in Hanoi Email: ngo.anh@mail.doc.gov Website: www.buyusa.gov/vietnam
- . Ms. Vo Thuy, Commercial Specialist U.S. Commercial Service U.S. Consulate General in Ho Chi Minh City Email: vo.thuy@mail.doc.gov Website: www.buyusa.gov/vietnam

V. Trade Events

Trade events, such as trade shows, trade missions and catalog shows, offer excellent opportunities for face-to-face interaction with foreign buyers and distributors. Of the many U.S. and international events held throughout the year, some are vertical (single industry theme) and some horizontal (many industries represented). The events organized or approved by the U.S. Department of Commerce can be especially useful for first-time or infrequent participants – they require less lead time to register and typically involve more handholding.

Some major trade events for the Pollution Control Equipment Industry are listed below.

- Tau Expo
  Location/Date: Milan, Italy January 2008
  www.fieremostre.it/

- Elmia Waste & Recycling
  May 2008
  www.elmia.se

- Eco-Tech Scandinavia
  October 2008
  www.swefair.se
  Contact: Commercial Service Trade Specialist Catharina Kronstrom
  catharina.kronstrom@mail.doc.gov

The Trade-Event Scheduling Web sites listed below allow selective searches for upcoming events by industry, location, type and date. They typically provide the event organizer, event descriptions and costs, and people to contact for more information. To find upcoming events for U.S., use industry search terms relating to pollution environmental technologies, etc.

Schedules for U.S. Government Organized or Sponsored Events

Domestic USDOC Events: http://www.export.gov/comm_svc/us_event_search.html
International USDOC Events: http://www.export.gov/comm_svc/us_event_search.html
USDA (Food & agriculture) Events:
http://www.fas.usda.gov/scripts/agexport/EventQuery.asp

Schedules for Commercially Organized Events

TSNN (http://www.tsnn.com/)
ExpoWorldNet (http://www.expoworld.net/)
Exhibition Center - Foreign Trade Online (http://www.foreign-trade.com/exhibit.htm)

VI. Available Market Research

Pollution Control Equipment

The reports listed below are country-specific market surveys relating to Pollution Control Equipment written by resident U.S. commercial staff in each country. Many of these reports analyze demand trends, the competition, business practices, distribution channels, promotional opportunities, and trade barriers.

All the reports can be obtained on-line at no cost from **www.export.gov**, or in print/on disk for $25.00 from:

CENTER FOR INTERNATIONAL TRADE DEVELOPMENT
13430 Hawthorne Blvd, Hawthorne, California 90250 USA
Phone: (310) 973-3173 Fax: (310) 973-3132 E-mail: **mkogon@elcamino.edu**

Indoor Air Quality Monitoring and Control Equipment	Austria	08/28/2007
The Medical Waste Treatment Market in Belgium	Belgium	12/29/2006
The Waste Recycling Equipment Market in Belgium	Belgium	08/08/2005
Urban Waste Segment in Brazil	Brazil	12/09/2005
Air Pollution Control Equipment and Services	Brazil	10/23/2006
Healthcare Waste Management in Brazil	Brazil	04/02/2007
Overview of the Environmental Market in Bulgaria	Bulgaria	12/27/2005
Environmental Technologies in Bulgaria	Bulgaria	02/09/2007
Environmental News & Opportunities Jan 2, 2007	Canada	12/29/2006
Water Treatment(Potable) Market	Canada	04/18/2007
Canada's Municipal Solid Waste Equipment Market	Canada	03/01/2006
Water Treatment Services ISP	Chile	11/29/2005
Solid Waste Sector ISP	Chile	11/29/2005
Air Pollution Control Equipment ISP	Chile	11/29/2005
Solid and Medical Waste Market in Sichuan	China	11/24/2006
Solid Waste Treatment in Guangdong	China	08/14/2005
Hazardous Waste Treatment Technology and Equipment	China	07/28/2005
Air Pollution Control in Guangdong	China	05/14/2007
Solid Waste Treatment and Handling Equipment	China	04/26/2005
Wastewater and Management	Croatia	09/28/2006
Sewerage Systems- Collection & Treatment of Rural Waste Waters	Cyprus	12/11/2006
Recycling Equipment Management in the Czech Republic	Czech Republic	07/10/2006
Air Pollution Reduction Business Opportunities	Egypt	03/27/2007
Recycling Equipment Market	Germany	09/20/2006
Water Treatment/Analysis Equipment	Germany	07/18/2005
Waste Management Technologies	Greece	02/22/2007
Future Improvement of the Haitian Environmental Sector	Haiti	03/23/2005
Solid Waste Management Technology	Hong Kong	06/29/2006

Selling Environmental Products to the Hong Kong Government	Hong Kong	06/27/2006
Hong Kong: Environment Market Brief	Hong Kong	04/04/2006
Medical Waste Management	India	06/26/2007
Hazardous Waste Management	India	04/27/2006
Pollution Control Equipment and Services	Italy	05/19/2005
Japan Industrial Wastewater Treatment	Japan	09/27/2006
New Focus on Asbestos Cleanup	Japan	07/26/2005
Water and Wastewater Industry	Japan	05/30/2007
Environmental Technologies Market in Malaysia	Malaysia	03/16/2006
Cleaning of the Apatlaco River, State of Morelos	Mexico	08/10/2007
Mexico: Air Pollution Control Equipment and Services	Mexico	06/28/2006
The Solid Waste Equipment Market	Mexico	02/23/2007
Pollution Control Equipment	Peru	03/06/2007
The Philippine Market for Pollution Control Equipment	Philippines	12/20/2005
Philippines Solid Waste Management Market	Philippines	11/29/2005
Collection & Recycling Equipment for Electronic Waste	Portugal	07/31/06
Air Pollution Control Equipment	Portugal	04/19/2005
Pollution Control Equipment	Saudi Arabia	03/28/2007
Recycling Market-Spain	Spain	07/25/2006
Air Pollution control and monitoring equipment	Switzerland	08/08/2007
WEE in Switzerland-Recycling of Electronic and Electrical Waste	Switzerland	08/03/2005
Environmental Technology Industry	Thailand	06/19/2007
Water Pollution Control in Thailand 2007	Thailand	03/01/2007
Air Pollution Control and Monitoring Technologies	Thailand	01/23/2006
Environmental Technologies Market in Turkey	Turkey	07/31/06
Environmental & Pollution Control in the United Arab Emirates	United Arab	10/02/2005
Opportunities in Municipal Waste Management	United Kingdom	12/13/2006

APPENDIX

Products in Pollution Control Equipment, by Schedule B Code
HS 8421: 22 Items

Schedule B	Description
842119	Centrifuges, n.e.s.o.i.
842121	Desalters, for water
842121	Filter apparatus, water
842121-29	Filtering and purifying machinery and apparatus for liquids
842123	Filters, oil or fuel, internal combustion engine
84212123	Fuel filters, internal combustion engine
84212123	Oil filters, internal combustion engine
842129	Oil-separation equipment
842129	Scrubbers, oil purifying
842131-39	Filtering and purifying machinery and apparatus for gases (including air)
842139	Absorbers, gas or oil
842139	Aeration and mixing units for sewage treatment system
842139	Air filtering equipment
842139	Air Purification Equipment
842139	Catalytic converters, chemical purifiers for gases
842139	Cleaners, air
842139	Degassers
842139	Industrial gas cleaning equipment except electrostatics precipitators
842139	Separating equipment, gas
842139	Parts n.e.s.o.i., for filtering and purifying machinery and Apparatus.