



Tijuana: North America's Medical Device Manufacturing Capital

May 2011

Tijuana: the Capital for Medical Device Manufacturing

Deciding where to grow your company should always include an objective analysis of real information - using facts, independent professional assessments, and looking at the true experiences of other companies and their executives. The medical device industry is no different, and in today's highly competitive (and regulated) environment, it can sometimes come as a surprise that **the quality, IP protections, lower-cost and logistical benefits of the City of Tijuana have allowed it to grow the largest concentration of medical device manufacturing employment in North America.**

It's a bold statement, but one backed up by a healthy dose of facts about today's Tijuana. As seen at right, Tijuana actually leads in employment levels amongst all other medical device manufacturing regions of North America⁷.

Tijuana is also only minutes from Downtown San Diego, and (with nearly 1.7 million residents) it's the second-largest city on the West Coast of North America. The next few pages are meant to **provide a fact-based introduction to help potential investors understand why - in 2011 - Tijuana is not only still the number-one city for the largest number of nearshore, maquiladora (IMMEX) manufacturing companies² in Mexico, but also a city on the frontiers of medical device manufacturing.**



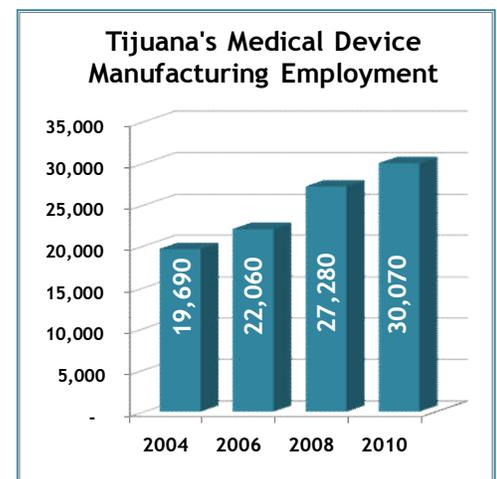
A Growing Cluster of Medical Device Firms

As of early-2011, there were **at least 41 medical device manufacturing companies operating in Tijuana**, making a wide range of high- and low-tech products including: dentures, electronic thermometers, hemodialysis components, infusion pumps, IV administration sets, lenses, nebulizers, orthopedic braces, oximeters, pacemakers, stents, surgical kits and equipment, urinary catheters, wheelchairs, x-ray film marking systems³ - and much more. While most of these companies are stand-alone subsidiaries, there are also a growing number of contract manufacturers, as well as companies using shelter maquiladora operations. As seen below, the number of employees also continues to grow in this sector, with over 10,000 positions added and an average annual growth rate of 8.7% since 2004⁴.

*"I don't think that many of us in San Diego were fully aware of the quality of medical device manufacturing in Tijuana...I can certainly confirm they are comparable to facilities found in the United States. I have no doubt device companies will be looking at the opportunities there firsthand, just as I did."*⁵

-Joe Panetta
CEO
BIOCOM

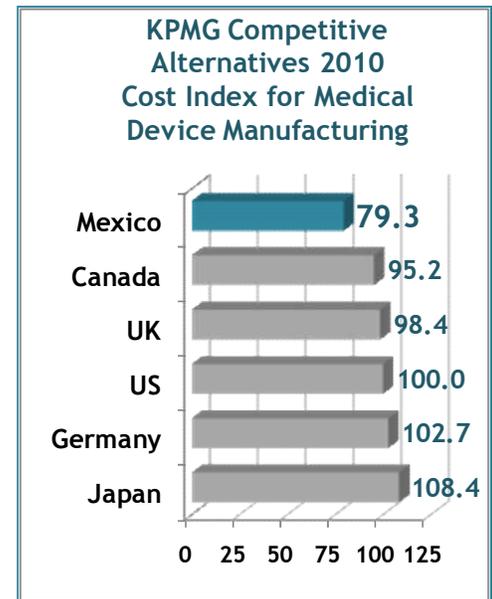
November 25, 2009 edition of Biocommunique⁵



Why Mexico and Why Tijuana? The Experts Agree...

Competing in a global environment isn't just a goal, it's often a requirement for today's medical device companies who face increasing competition from around the world. This force of globalization is, in fact, why the U.S. FDA has established 10 overseas offices to foster better international oversight and collaboration - including one in Mexico in 2009.⁶

As more options exist for offshore and nearshore manufacturing, it's also useful to note that Mexico was ranked #1 as the lowest-cost (and highest after-tax profit) country among ten analyzed by KPMG in their 2010 Competitive Alternatives study. This study evaluated the "impact of 26 significant business cost components that are most likely to vary by location", finding (as seen at right) that Mexico was determined to provide medical device manufacturers with more than a 20% cost advantage compared to the U.S., as well as significant cost advantages compared to other global locations. KPMG's analysis also found that a location in Mexico could result in nearly four-times the after-tax profit as compared to the U.S.⁷



Also notable: while many regions market themselves as possible locations for globally-expanding companies, no other international city offers the unique combination of:

- A large base of 40+ existing medical device manufacturers;
- A "next-door", nearshore location with quick logistical access to the West Coast of the U.S. and major international seaports and airports measured in hours - not weeks;
- A trained, quality-conscious and highly bilingual workforce;
- Strong intellectual property-rights protections guaranteed via NAFTA and TRIPS; and
- Lower-cost (as seen in the sample at right⁸), just-in-time production capabilities and experience.

Using sample data derived from industry representatives and the Tijuana EDC, significant savings can be gained for both smaller and larger medical device manufacturing operations in Tijuana:

Description	U.S. Cost	Tijuana, Mex. Cost
Employees		
Number of Employees	140	140
Direct	101	101
Indirect	25	25
Administrative	14	14
Hours/Work Week	40	48
Hours per year	2080	2496
Labor cost per hour		
Direct Labor Cost/Hr	\$ 14.05	\$ 3.20
Indirect Labor Cost/Hr	\$ 23.52	\$ 13.38
Admin Labor Cost/Hr	\$ 26.51	\$ 24.54
Factory cost		
Labor	\$ 14.05	\$ 3.20
Overhead	\$ 8.56	\$ 5.03
General & Administrative	\$ 4.19	\$ 4.01
Factory cost / Hour	\$ 26.80	\$ 12.23
Total factory operating cost	\$ 5,629,632	\$ 3,083,639
Potential annualized savings		\$ 2,545,993

"I have been involved with three global companies all over the world. At the end of the day, Tijuana is one of the best options for quality, service and cost - not to mention a prime location."

-Gerardo de la Concha
VP Operations Mexico
Medtronic Mexico

Access to Customers & Suppliers

Just-in-time production isn't just a theoretical concept for Tijuana's medical device companies - it's a real, strategic logistical benefit that allows many of the city's manufacturers to not only reduce or avoid inventories, but also to ship finished product into the U.S. market in as little as a few hours.

Physically located only 15-minutes from downtown San Diego, California, companies operating in Tijuana are both easy to access for corporate communications and control, and actually *have* easy access

to transportation infrastructure so medical device products can be trucked to anywhere in the U.S. within one- to five-days (with time-sensitive products flown from SAN, LAX, and other cargo airports to customers in only hours).

Great access isn't just about geographic proximity - it's also what medical device manufacturers get with their suppliers. Tijuana's existing medical device companies already take advantage of a well-developed network of suppliers - many of them in Southern California and the Southwest United States. These networks grow larger each year with industry-sponsored "Supplier Day" events that are organized in Tijuana as yet another way to support the medical device cluster (note: the next supplier event is scheduled for September 7, 2011).

This high-degree of industry access and cooperation, in fact, has recently attracted another key supplier to Tijuana: a new e-beam sterilization vendor that will be in operation by mid-2011, and be located within a 23,000 square-foot facility adjacent to the Otay Mesa Port of Entry⁹.



Nearly all of Tijuana's 40+ medical device manufacturing firms operate under FDA or CE marking regulatory requirements (depending on final market for products, and if considered a regulated device). In addition, over 90% of all manufacturing firms with 250+ employees are certified under ISO 13485, ISO 9000 or other quality management standards. Below are just a few of the firms operating under world-class standards in Tijuana:



Tijuana: the Future Outlook

The City of Tijuana offers a wide range of benefits for companies in the medical device manufacturing sector. Its well-trained, highly-bilingual workforce has not only already attracted companies not just from California and the U.S., but also from around the world, such as Germany, Singapore, Sweden, New Zealand, Iceland, and other locations in Asia and Europe. These globally-competitive companies have helped Tijuana grow to have the largest concentration of medical device manufacturing employment in North America - and in the process they have gained from the city's lower-cost production, strong IP protections, immediate proximity to U.S. customers and transportation hubs, and supplier networks.

Industry synergies have also led to a growing number of medical device contract manufacturers, the formation of the 20+ member public-private *Medical Device Cluster of the Californias* (a trade group based in Tijuana), and other opportunities connecting life sciences firms and research institutions in Southern California. As Tijuana continues to become better known as a capital of the medical device manufacturing industry, it's not hard to envision that the *Tijuana-San Diego Bio Border* will continue to evolve, and remain a prime location for life sciences-related manufacturing and development for decades to come.

For more information about this Analysis, or about the City of Tijuana, please contact the Tijuana Economic Development Corporation at 1-888-TIJU-EDC.

¹ US regional data derived from Crossborder Group analysis of 2009 NAICS-based employment data from U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages (<http://data.bls.gov/cgi-bin/dsrv?en>) accessed February 2011. County- and State-level data for NAICS codes 325413, 333314, 334510, 334516, 334517, 339112, 339113, 339114, and 339115 was aggregated to measure "medical device manufacturing" industry employment in each area in the US. Data from Tijuana based on direct industry survey from 38 medical device firms in Tijuana; estimate for Toronto CMA based on 2009 average employment information from Federal and city investment promotion offices; data from Chicago Metro region based on regional analysis of 2009 employment in NAICS code 3391 only.

² Website of Mexico's official statistical agency, Instituto Nacional de Estadística y Geografía, accessed March 2011 (<http://dgcnesyp.inegi.org.mx/cgi-win/bdieintsi.exe/IQYMR250110>).

³ Research by Crossborder Group of FDA medical device database, interviews with company representatives, and Baja California's Medical Device Cluster trade group (<http://www.industriamedica.org/>).

⁴ Tijuana medical device industry survey of 38 firms performed by Crossborder Group (February 2011). Company representatives verified approximate average employment July-December 2010 (to avoid seasonal variations).

⁵ Quotation from Nov. 25, 2009, BIOCOM newsletter (http://www.biocom.org/bcq/archive/44/cover_story/).

⁶ "FDA Expands Presence Outside U.S. with Opening of Mexico City Post," FDA press release (Dec. 15, 2009).

⁷ "Competitive Alternatives: KPMG's Guide to International Business Location - 2010 Edition", p. 20-21 (<http://www.competitivealternatives.com/>).

⁸ Cost estimate based on average 2009 US and Tijuana medical device industry wages; source: the Tijuana EDC.

⁹ Information based on interviews with representatives of Tijuana Economic Development Corporation, February 2011.