

# The Effects of Industrialization and the Maquiladora Export Industry on the Economy, Health and Environment of Aguascalientes



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# **The Effects of Industrialization and the Maquiladora Export Industry on the Economy, Health and Environment of Aguascalientes**

Since the enactment of the North American Free Trade Agreement (NAFTA) in 1994, the economic, social and environmental structures of Mexico, the United States and Canada have changed, while the governing structures confront new challenges in decisionmaking which according to one's perspective either represent new opportunities for growth and improved quality of life or new problems in equitable development.

This document summarizes a new report by Periodismo para Elevar la Conciencia Ecológica (PECE) and the Texas Center for Policy Studies on the initial effects of industrialization and the maquiladora export industry on the economy, health and environment of the Mexican state of Aguascalientes. The Mexican state of Aguascalientes is a prime example of the changing economic structure in Mexico since NAFTA. Although growth in maquiladoras and other manufacturing industries has led to job growth and higher exports of products, it has also created economic, social, and environmental problems. Many of these problems seem to derive from an industry more focused on international supply and demand than on local or regional development.

Following a brief introduction and examination of NAFTA itself, the report examines changes in the region since the enactment of NAFTA. The social profile presents the state demographics as they relate to industrialization, and the economic profile emphasizes growth in the maquiladora export program. Finally, an environmental profile of the state considers the impacts of industrialization and provides policy recommendations for the future.

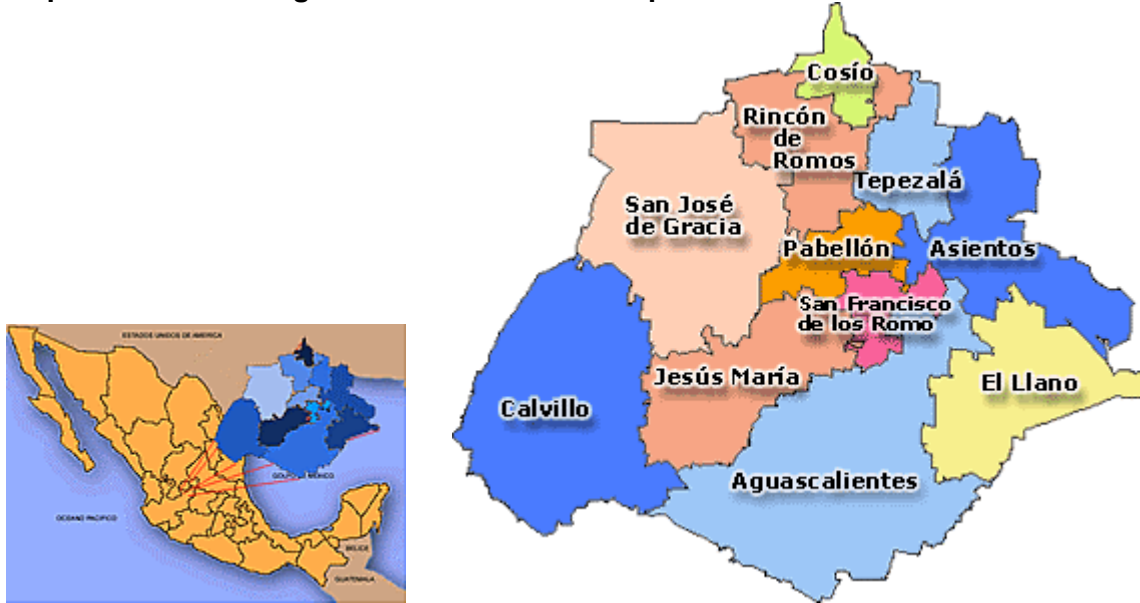
## ***I. Introduction and Historic Background***

The State of Aguascalientes takes its name from the thermal waters that – until recently – were the area's main attraction. Despite being one of the smallest Mexican states, Aguascalientes has experienced spectacular economic growth in the last decade. One might see this growth embodied in the buses and vans that carry thousands of workers to their jobs in the *maquiladora export industry* every day, at times from as far away as communities in the neighboring states of Zacatecas, San Luis Potosí and Jalisco.

This scenario is a relatively new one for Aguascalientes. Although many industries already existed in the 1980s – including major foreign operations such as Nissan -- with the signing of NAFTA in 1994, expansion of existing facilities as well the arrival of new industries occurred. Dozens of new textile maquiladoras appeared in the region to take advantage of tariff reductions and other incentives. Non-maquiladora industries also operate in the region, mostly through significant foreign investment and mainly in the automotive and electronics sectors. Virtually all of these industries are geared toward the export of goods, mainly to the United States.

The last 25 years have also seen a shift in Aguascalientes from a rural to an urban population.<sup>1</sup> Known nationally as a center of milk production as well as the leader in the production of the fruit *guayaba* (or guava), currently these activities have lost much of their importance.

### Map 1. Location of Aguascalientes and Municipal Division



Source: State Government of Aguascalientes Website

A combination of freezes and droughts have significantly curbed guava production. Wine production is no longer as profitable due to changes in Mexican import regulations and tariffs. In fact, it is now cheaper to import grapes from Chile than it is to buy them from regional vineyards. The decline of the grape industry has also meant the end of local table wine and brandy production, for which Aguascalientes had become widely recognized.

The region's agriculture has been affected by a shift in resources to recruit industrial export facilities as part of a concerted effort to attract large foreign firms. This effort helped bring Nissan, Texas Instruments and Xerox to Aguascalientes in the early 1980s. To accomplish this, federal, state and municipal governments have expanded energy grids, water management networks and interstate highways to accommodate both the industries themselves and the resulting rapid urbanization.

Offers to investors in Aguascalientes included cheap and abundant labor, free or subsidized utilities and – according to the state government's official website -- a peaceful labor climate characterized by more than 40 years without strikes. In addition, Aguascalientes offered roads in good condition and train connections to the United States and Mexico City.

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<sup>1</sup> According to the latest Mexican Population Census, some 80 percent of the population in Aguascalientes lives in urban areas.

## ***II. Relationship between Industrialization in Aguascalientes and the North American Free Trade Agreement***

This section will explore the relationship between the expansion of export companies, the increase in direct investment and the growth in the number of maquiladoras in Aguascalientes since NAFTA. Rules governing investor rights and tariff and non-tariff barriers are essential components in setting economic and environmental policy.

### **Disappearing Tariffs**

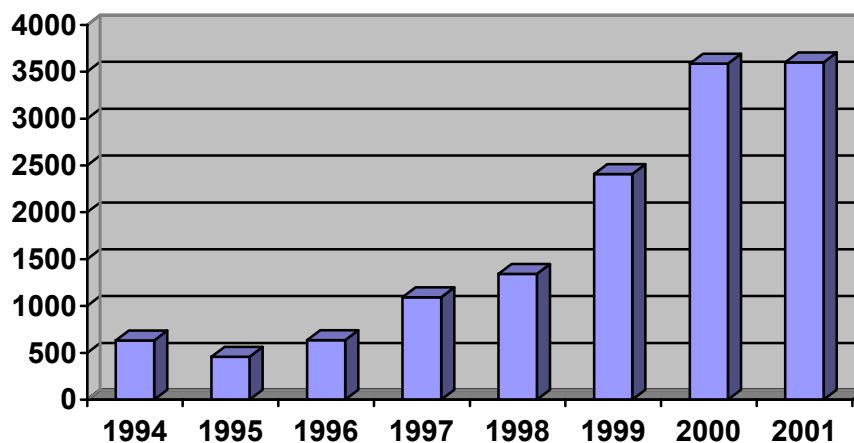
NAFTA is really a treaty about how to *administer* not how to completely *open* trade between Mexico, the United States and Canada. Although it called for the immediate elimination of certain tariffs, NAFTA has served more as a system to gradually reduce tariffs over time and to carefully regulate trade between the three countries. In the majority of cases, the elimination of tariffs takes up to 15 years to complete.

The devaluation of the peso between 1995 and 2000 also facilitated commercial growth in Mexico. This fallout heavily favored export industries, and the growing demand for products in the United States during that same period fueled international trade, as the average tariff imposed by the United States on Mexican products fell from almost 4% to less than 1%.

Five years after NAFTA, 76.2% of Mexico's exports to the United States and 66.2% of Mexico's imports from the United States crossed the border without tariff. Most of this trade involved the import of inputs for the maquiladora export sector and the export of its maquiladora-made products to the United States.

Between 1993 and 1999, textile exports and clothing assembly, an industry which is particularly strong in Aguascalientes, in Mexico grew by 419%, and by 1998 Mexico passed China to become the largest exporter of these products to the United States.

**Figure 1. Value of Apparel Exported from Mexico to the United States, 1994-2001, in Millions of Dollars**



Source: United States International Trade Commission, HTS Code 62, available at <http://dataweb.usitc.gov/>.

Another beneficiary of tariff elimination has been the automotive export sector. In 1999, this sector in Mexico exported \$19.9 billion of products, representing the second most important sector behind electronics. For its part, Mexico imported \$8.2 billion in automobile parts and vehicles in 2001, further evidence of the impact of tariff reductions.

### **Direct Investment and NAFTA**

Although NAFTA serves principally to facilitate commercial exchange between the three countries, it also promotes foreign direct investment in the region. According to four of the Agreement's objectives, NAFTA seeks to:

- *Promote conditions of fair competition in the free trade area;*
- *Increase substantially investment opportunities in the territories of the Parties;*
- *Provide adequate and effective protection and enforcement of intellectual property rights in each Party's territory; and*
- *Create effective procedures for the implementation and application of this Agreement, for joint administration and for the resolution of disputes.*

These provisions offer much more explicit protection of foreign investment, including Chapter 11 of NAFTA, which has been controversial. In addition, anticipating NAFTA, Mexico passed the Law of Foreign Investment in 1993. Previously, Mexican laws had not permitted foreign investment without majority Mexican participation in the project, except for the maquiladora program. The new law permits up to 100% of an investment to be made with foreign capital, with few exceptions. With the passing of the new investment law and NAFTA, United States foreign direct investment in Mexico grew from an average of \$2.2 billion per year between 1990-1993 to \$3.6 billion per year between 1994-1998.

### **NAFTA and the Maquiladora Export Industry**

Mexico began the Maquiladora Export Program in 1965 by setting up various manufacturing and assembly plants owned mainly by non-Mexican firms. Under the Program, raw materials are delivered to the maquiladoras for assembly, and the final product is exported with minimal taxation. Instead of paying tariffs on imports, these firms pay a temporary bond and agree to manufacture products solely for export using duty-free imported products specifically for this purpose. This system allows 100% of the investment to be foreign.

After witnessing the success of the border maquiladoras, Mexico began to promote the establishment of maquiladoras in the interior of the country. States like Puebla, Jalisco and even Yucatan began to receive investments under the program. The greatest employment growth in the maquiladora export industry occurred from post-NAFTA 1995 until late 2000, when the United States economic growth and demand for products slowed considerably.

Although there is no specific chapter in NAFTA related to the maquiladora export program, certain provisions do affect the program. Under Article 303, for example, NAFTA continues to permit the temporary payment of tariffs on inputs and refunds when the final products are exported. At the same time, NAFTA eliminated the tariffs on products exported from Mexico to the United States, further lowering the costs of export. Strategically, Article 303 did not permit temporary payment on inputs that came from non-NAFTA countries like China.

Article 304 eliminated the requirement that a certain percentage of the maquiladora's production be exported. Today a maquiladora has the option of selling 100% of its products in Mexico. Essentially, NAFTA eliminated the differences that exist between a maquiladora, a national company and a composite company. The maquiladoras, however, still have certain tax advantages over non-maquiladora plants.

Maquiladoras pay social severance payments and social security, but they traditionally do not pay corporate income tax because, in general, they do not sell directly but rather transfer products to foreign companies. In the years since NAFTA, the tax code has been changed repeatedly, including the creation of a lump-sum tax payment for maquiladoras. Certainly, maquiladoras do not want to pay additional taxes, because that would put them at a comparative disadvantage with Asian producers. Maquiladoras are also wary of being taxed twice – once in Mexico and once where they are based, which is usually the United States. A recent agreement involving high level officials of the U.S. and Mexico has temporarily resolved this issue, at least for several years. Maquiladoras now do pay higher taxes than they once did, but lower than most other industrial sectors.

### **NAFTA and Environmental Protection**

Although NAFTA is a commercial agreement and not an environmental one, it does specify that each country should develop and enforce its own environmental and public health laws. Article 114(2) stipulates that it is "inappropriate" to eliminate environmental, health or safety laws in order to promote commercial expansion or to attract direct investment. If a country determines that another country is violating these principles to attract investment, it can present a complaint to the Free Trade Commission and the Council of the Commission on Environmental Cooperation (CEC).

NAFTA includes a side agreement on the environment called the North American Agreement on Environmental Cooperation (NAAEC). Under the Agreement, any *citizen or non-governmental organization* in the three countries can denounce a government that is violating its environmental laws. A petition is presented to the CEC, which can then call for the preparation of a detailed report of the case and publish "a factual record of its findings." Although this process has helped bring violations to light, the CEC reports have no legal bearing. As of the time of publication, citizens and organizations from the three countries had presented 33 petitions, including 14 in Mexico. None of the 14 petitions in Mexico have concerned the state of Aguascalientes.

The NAAEC also outlines the procedure for a *government* to denounce another government for violating its environmental protection laws. Unlike the citizen petition process, the government procedure can result in the selection of an arbitration panel to study the case and develop a plan of action to mediate the environmental problems. If the country at fault does not comply with the Commission's ruling, then it can be fined

and can lose its benefits, such as reduced tariffs. To this date, no government has brought a dispute related to failure to enforce its environmental laws.

Under NAFTA and its side agreements, a country cannot adopt an environmental law that, in reality, is a “non-tariff barrier” with the intention of preventing investment or inhibiting trade. Countries and states can theoretically enforce all of their laws unless they restrict or impede free trade. The General Agreement on Tariffs and Trade (GATT) permits the restriction of the import of a good when it is “necessary to protect the life or health of humans, animals or plants.” However, whether or not such a restriction is “necessary” itself can be the subject of a trade dispute and those challenged must show it is the least restrictive measure possible.

A Mexican law derived from the 1983 La Paz Agreement requires maquiladoras and other export industries that import inputs to also export any hazardous wastes generated during the production process. In theory, this provision implies that many of the 3,000 maquiladoras operating in Mexico must export their hazardous wastes to the United States, where most of the inputs originate. The reality is that much of this waste has remained in Mexico. According to the National Institute of Ecology (Instituto Nacional de Ecología), the maquiladoras exported more than 50,000 tons of hazardous wastes to the United States in 1999, and other Mexican industries exported almost 31,828 tons. Many suggest that these quantities are relatively small compared to the amount of wastes actually generated. If maquiladoras change their status and become domestic Mexican companies, then they will be able to “avoid” exporting hazardous wastes without losing the ability to export 100% of their products. So far there has not been a large conversion of maquiladoras to Mexican corporations, largely because tax incentives for maquiladoras are still in place.

### **NAFTA Summary**

The goal of the North American Free Trade Agreement is to facilitate trade and investment between Mexico, the United States and Canada. Specifically, the Agreement reduces and in most cases eliminates tariffs imposed on imports and exports between the countries, especially in the textile and apparel sectors. At the same time, it offers certain protections to investors and eliminates preferential treatment of domestic investors. The Agreement includes a controversial provision – Chapter 11 – that investors have used against governments to obtain financial compensation for acts of “expropriation.”

NAFTA theoretically supports government rights to enforce environmental laws, but these laws do not have the same weight as those that support the investor, and thus far countries have not used provisions to ensure environmental compliance by their competitors, although citizens have used a relatively weak provision contained in the NAFTA side agreement to highlight issues of non-enforcement. The maquiladora export industry began as a binational program for the creation of jobs along the United States-Mexico border. Thanks to the program’s success, the Mexican government expanded the program to include other parts of the country, including the state of Aguascalientes. Although NAFTA has no direct relationship to the maquiladora program, it does eliminate many of the advantages that the maquiladoras had in comparison to other industries, although tax advantages and the freedom to both sell domestically and to export continue to make the maquiladora industry an attractive business strategy.

### **How does Chapter 11 protect the investor, and why is it controversial?**

Under NAFTA's Chapter 11, investors from Canada, the United States or Mexico must be treated equally by the country, state or province in which they invest (Article 1102). Article 1110 of the Treaty declares, "no Party may directly or indirectly nationalize or expropriate an investment of an investor of another Party in its territory or take a measure tantamount to nationalization or expropriation of such an investment," with few exceptions. If a country or state, through its actions, does expropriate an investment, then an arbitration panel may require the country at fault to compensate the investor for the lost investment. This means, for example, that Aguascalientes cannot give preference to investors from Monterrey over investors from Canada in the establishment, direction, operation or sale of a factory.

Under Article 1115, private investors can initiate an arbitration process against a national government if they claim that the government regulatory actions have unduly interfered with their business investment. The organizations through which one can effect this process are the International Center for the Settlement of Investment Disputes (ICSID) – a dependent of the World Bank – and the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL).

These international organizations use arbitration panels selected behind closed doors and do not offer appeals. To this date, investors in all three countries have used Chapter 11 stipulations to try to receive remuneration for lost investments. The arbitration panels are highly controversial not only because of their secretive and antidemocratic selection process but also because of their often loose interpretation of which measures are "equivalent to expropriation." In one recent case, Mexico had to pay \$16 million to a private California company because the state government of San Luis Potosi did not authorize the operation of a hazardous waste landfill in the state.

NAFTA-related changes have increased investment in and exports from Aguascalientes. The following sections will both detail this growth as well as examine questions arising from this growth. First, to what extent has economic growth come at the expense of the environment and public health? Is economic growth accompanied by a commitment for a clean environmental and a growth in environmental infrastructure? Have governmental authorities sold Aguascalientes as a viable and attractive place to invest because of the lack of environmental and labor regulations and their enforcement? In addition, the report will also examine to what extent industrial growth has improved quality of life and the economic well-being of Aguascalientes workers and residents.



### ***III. Aguascalientes: A Social Profile***

Located in central Mexico, the state of Aguascalientes borders Zacatecas to the north, east and west, and borders Jalisco to the south and east. Nearly one million people live in the state, with over two-thirds of them concentrated in the capital municipality of Aguascalientes. Partly as a function of increasing industrialization – attracting migrants to the cities – the state is increasingly urbanized, with the percentage of citizens living in urban areas increasing from 76.5 to 80.2 percent between 1990 and 2000.<sup>2</sup> Large numbers of immigrants help bolster city populations, as people from neighboring states move to Aguascalientes in search of manufacturing jobs. Between 1990 and 2000, the percentage of residents born outside the state rose from 19.2 to 19.9% with the percentage of resident in the municipality of Aguascalientes born outside of the state slightly higher, at 24.3%.

In 2000, Aguascalientes had a higher percentage (more than 95 percent) of residents over the age of 14 who were literate and a higher percentage of children (more than 92 %) between the ages of six and 14 in school than any states with the exception of the capital municipality of Distrito Federal and the northern border state of Nuevo León. The live birth rate in Aguascalientes fell from 2.71 to 2.65 per woman between 1990 and 2000, with rates significantly higher in rural areas than in the urbanized capital.

In terms of employment, the 2000 Census indicated that 50.8% of the residents over the age of 12 are economically active. Between 1990 and 2000, employment in the primary sector – agriculture – fell from 15% to 7.4%, the secondary sector – principally manufacturing – grew slightly from 34.2% to 35.3%, and the tertiary sector – services – grew from 48.9% to 54.8%. Wages grew overall, with 53.4 percent of the economically active population earning at least twice the minimum wage, as opposed to 35 percent in 1990. It should be noted that the capital municipality of Aguascalientes is the only municipality where more than 50 percent of the economically active population earns at least twice the minimum salary.

In 2000 most private residences in the state – 86% – had three or more rooms and 75.3% were privately owned. Of the residences, 91.6% had running water in the home and 97.9% had electricity. Of the 2,370 residences lacking running water most relied on a well, local river or stream to supply their water needs, while about 40 percent bought their water from a truck.

About 4.5 percent of residences lacked wastewater service in 2000. Of those that had service, more than 97 percent connected to a wastewater treatment system, while others relied on septic tanks, pit privies or simply discharged wastewater directly to a river, stream or ditch.

The capital municipality is the only city in the state with a landfill that meets official specifications. About 15 percent of households in the state receive direct pick-up at their resident, while about 3/4 make use of public bins or containers. The other 10 municipalities – and residents from surrounding states – have trash transported to open air dumps or dump directly on abandoned land and lack basic services.

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<sup>2</sup> INEGI, XII Censo General de Población y Vivienda, 2001.

These basic figures of income, services, educational levels and birth rates demonstrate that there have been significant improvements for the residents of Aguascalientes over the last 10 years. At the same time, the numbers also point to the vast needs which are not being met in the state. And the statistics tell just one part of the story. Beggars in the city streets, pockets of dilapidated neighborhoods, deteriorating public infrastructure, lack of public transportation, the near impossibility for the working classes to gain access to universities, and state and local governing structures with less resources to meet even basic needs tell another.

The corporations and businesses which have benefited from an economic “boom” over the last 10 years, on the other hand, have donated resources to “good” causes to help meet a small percentage of these needs, including to education and worker housing. What is needed, however, is a sound fiscal policy which makes sure that the taxes they do pay help meet these needs and are invested for the good of the community, and that some percentage of their profits also flow to community and social development.

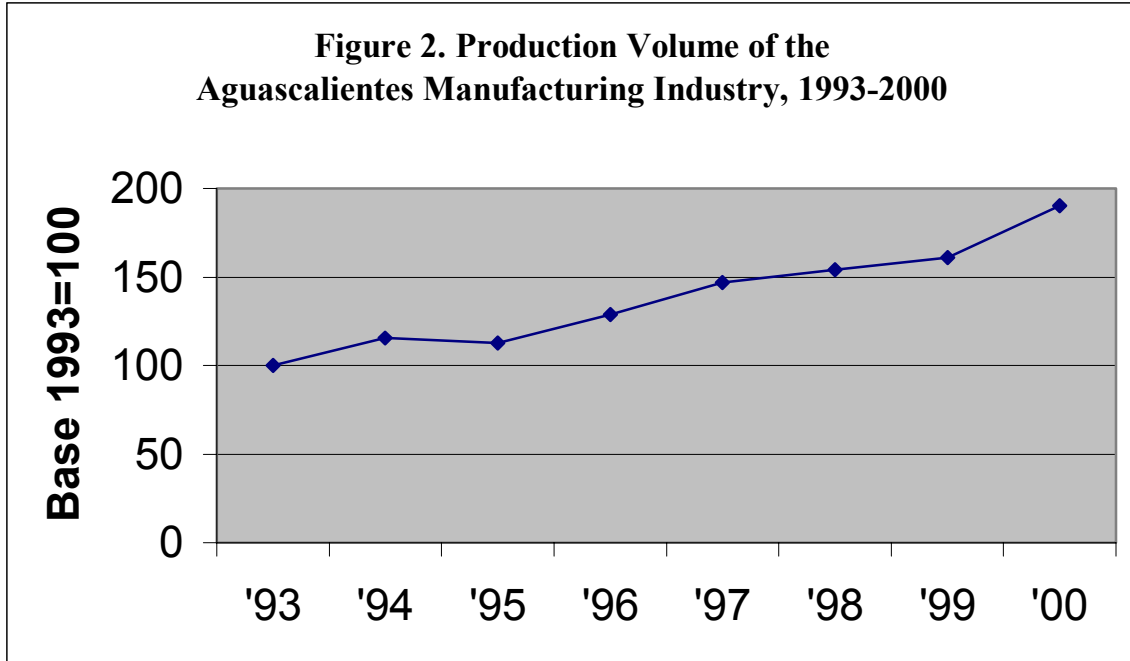
#### ***IV. Aguascalientes: An Economic Profile***

The municipality of Aguascalientes stands as an island in the regional context. In general, its population has an acceptable – by Mexican standards – standard of living. There are plenty of advertisements for jobs in factories or services, and activity in the industrial parks and commercial centers are the envy of neighboring states.

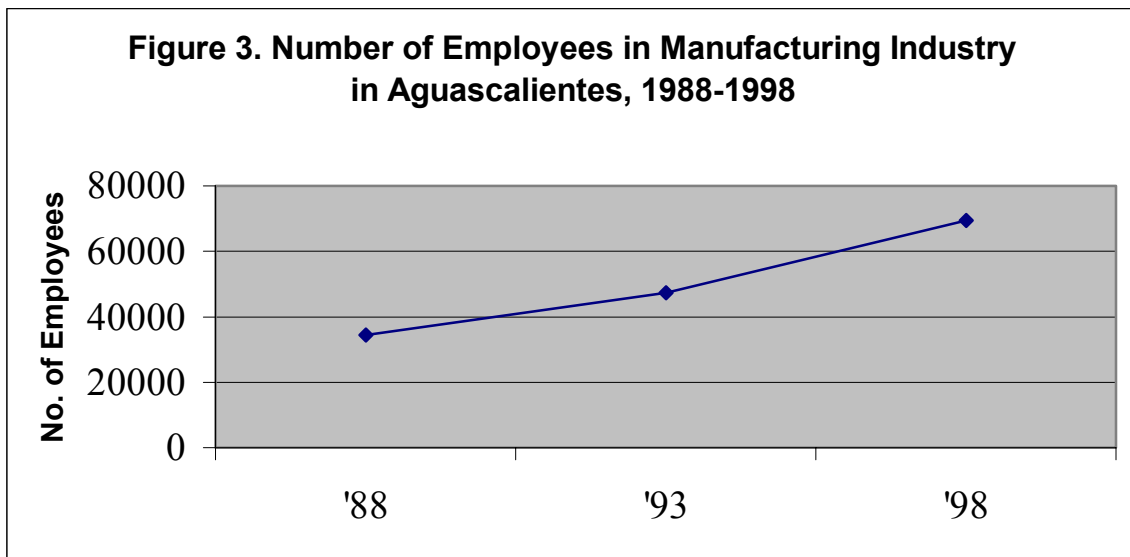
The massive production for the export market – initiated in the 1980s but strengthened in the 1990s with the arrival of maquiladoras – the generation of consumer goods like textiles, food and drinks for the regional market and business services to attend these demands are at the center of the state’s economic growth.

Although the country as a whole had economic difficulties after 1995, in part because of the peso devaluation, Aguascalientes’ economy grew at a rapid pace until the U.S and world recession caught up with it in 2001. In 2000, the commercial and service sector supplied more than 60 percent of the state’s gross domestic product, with the primary sector supplying about 4.4 percent and the industrial sector supplying the other 33.4 percent. Between 1993 and 2000, the industrial sector accounted for the majority of the growth in the economy, increasing its share of the gross domestic product from 29 to 33 percent. Overall, Aguascalientes’s growth outstripped the nations, particularly in the manufacturing sector.

Between 1993 and 2000, the manufacturing industry in Aguascalientes nearly doubled its production value, number of facilities, production volume and aggregate value (see Figure 2). In addition, the number of employees in the manufacturing industry grew from less than 35,000 to 69,441 between 1988 and 1998 (see Figure 3).



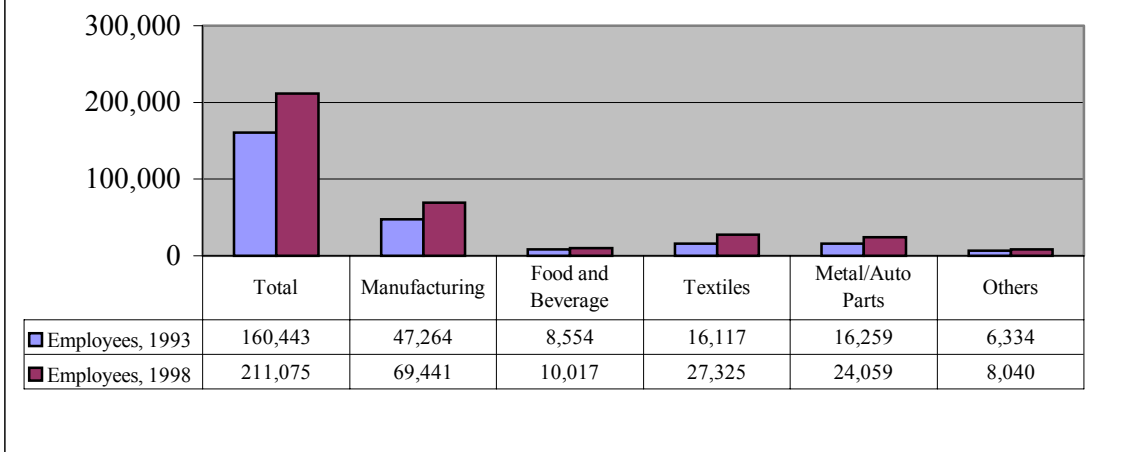
Source: INEGI, Censo Económico 1989, 1994 y 1999.



Source: INEGI, Censo Económico 1989, 1994 y 1999.

The major subsectors involved in this growth were *food, drink and tobacco; apparel and textiles, and metal products and machinery*. These three subsectors represented nearly 92% of the employment in 2000 and 96% of the production value in the manufacturing industry (see Figure 4). According to the 1999 Economic Census, 64.7% of the employees occupied in manufacturing industries were located in the municipality of Aguascalientes, with 44,962 workers out of a total of 69,441.

**Figure 4. Employees by Major Manufacturing Sector in Aguascalientes, 1993-98**

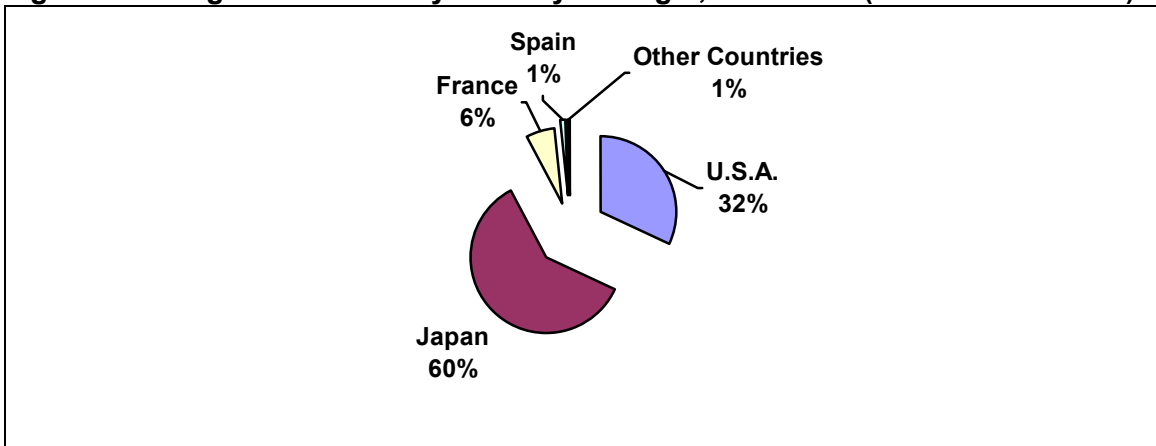


Fuente: INEGI, Censo Económico 1994 y 1999.

### **Foreign Direct Investment**

Foreign direct investment has played a significant role in the industrialization of Aguascalientes. Between 1980 and 2002, foreign investment in Aguascalientes totaled \$3.9 billion dollars and generated over 30,000 jobs during that period. Most of the investment came from Japan, although in recent years investment by U.S. companies – in both auto parts and textiles -- has grown more rapidly and generated more job growth (Figure 5).

**Figure 5. Foreign Investment by Country of Origin, 1980-2002 (Millions of Dollars)**



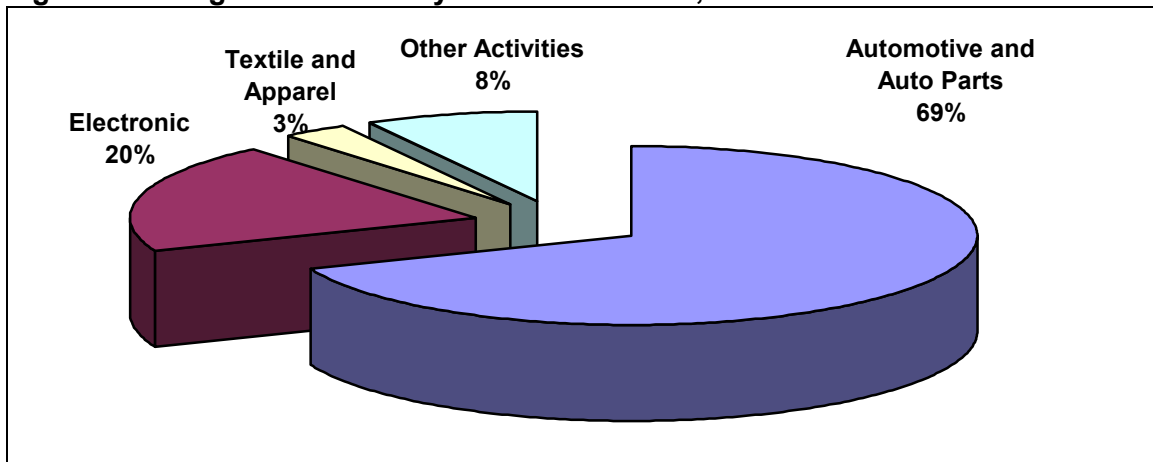
Source: State Government of Aguascalientes, Secretaría de Desarrollo Económico, Dirección General de Estadística

The arrival of the Japanese giant Nissan in the 1980s signaled the beginning of this large-scale arrival of foreign investment as well as the industrialization of the state and its importance as a center of the automotive industry. This has continued to the present day, in particular with the recent joint venture between Nissan and the french company

Renault in Aguascalientes. To date, nearly 70 percent of foreign investment has occurred in the automotive industry, followed by the electronic, and the textile and apparel industry (see Figure 6). Similarly, according to state figures, the number of jobs generated by foreign investment has been greatest in the automotive (36 %), textile and apparel (33%) and electronic industries (19%).

Another recent report found that virtually all of the investments – 98 out of 111 companies – had occurred in the capital municipality of Aguascalientes. Most of this investment has been recent. Thus, in 1993, there were only 12 companies composed of mainly foreign investment. Between 1999 and 2002 alone, more than 23 new foreign companies invested in Aguascalientes, including companies from France, Brazil, Switzerland and Spain. Investment in the textile and clothing assembly industries comes not only from the United States but also from Hong Kong and from other Mexican regions, and includes companies such as Modas de Aguascalientes, Salomón Exports, Ropa de Ciénaga, Continental Colors, Cydsa-San Marcos, Beatrice Products, Kappler de México, Bodywear de México and Lucky Star.

**Figure 6. Foreign Investment by Sector and Value, 1980-2002**

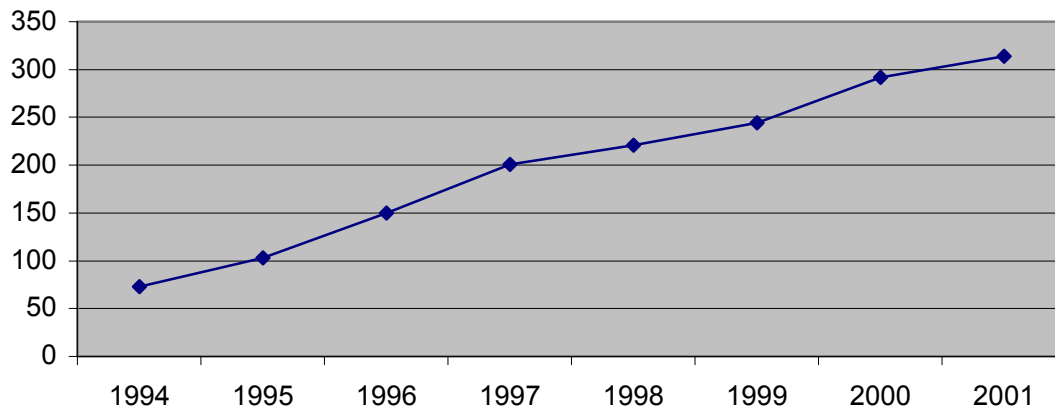


Source: State of Aguascalientes (Secretaría de Desarrollo Económico, Dirección General de Estadística), 2002.

These foreign-owned companies are mostly engaged in the export of goods to the U.S. and other countries. Companies dedicated to producing for the export market increased their level of exports both in volume and value over the last several years, indicating that the economy of Aguascalientes has become more and more connected to that of the U.S. and the world. While companies in the food and beverage sector produce mainly for the local and regional market, companies in the auto parts and automotive, textiles and apparel and electronics sectors are nearly exclusively concerned with exporting their products abroad. Most of those firms exporting from the apparel and textile sector are maquiladoras (for more discussion see text below). Overall, the number of all facilities exporting outside of Mexico located in Aguascalientes grew from some 60 in 1995 to over 300 in 2001 (see Figure 7).<sup>3</sup>

<sup>3</sup> Government of State of Aguascalientes, Secretaría de Desarrollo Económico.

**Figure 7. Number of Export Firms in Aguascalientes**



Source: State Government of Aguascalientes Secretary of Economic Development, SEDEC.

Most of this export activity has occurred recently. A 1997 study of 161 export companies found that 83% of the companies started exporting after 1990. Automotive and auto parts constitute the largest exporting sector, with Nissan by far the largest within that sector. (See Table 1).

**Table 1. Growth in Exports in Aguascalientes and Leading Export Sectors, 1993 – 2000 (millions of dollars/year)**

Year	Automotive/ Auto parts	Electrical/ Electronics	Clothing/ Apparel	Agroindustry, Food Beverage	Total
1993	425.4	167.6	44.6	9.6	683
1994	660.6	161.5	48.8	15.8	936
1995	941.9	266.6	66.6	18.7	1,366
1996	1,162.4	279.0	170.5	27.0	1,743
1997	1,237.5	357.9	195.5	41.3	1,970
1998	700.9	380.9	279.7	41.9	1,579
1999	819.7	389.8	389.5	42.8	1,822
2000	2,061.5	515.5	469.5	43.0	3,320

Source: Secretary of Economic Development, SEDEC, and State Commission on Economic Development and Foreign Trade, State Government of Aguascalientes

### **Textiles and Apparels**

Textile and apparel production has a long tradition in the state predating NAFTA. However, since the passage of NAFTA, the sector has received considerably more foreign investment principally by U.S. and Asian investors. Several local companies have switched from domestic to export production and in some cases registered as maquiladoras, contracting with larger companies abroad to produce lines of clothing.

Both the industry and the state and municipal governments have taken a number of steps to help this industry survive and flourish in the difficult transition from domestic to export production. Steps taken have included commercial expositions, promotional trips to the U.S. and other markets, and the creation of a new formal “cluster” composed of both foreign and local businesses, educational institutions and governmental agencies dedicated to helping the industry meet international demands for products. In addition, a technology center has been created with public and private money to help the sector.

### **The Maquiladora Export Sector in Aguascalientes**

In recent years the number of export maquiladoras in Aguascalientes has grown dramatically (see Table 3). After the federal government created a program to encourage this type of industry in the 1960’s, most early maquiladoras were found only in the six northern border states (Baja California, Sonora, Chihuahua, Coahuila, Tamaulipas, Nuevo León). In fact, in 1992 there were only four facilities in Aguascalientes. This number grew to 49 by 1996 and by 2001, there were 93. A combination of provisions in NAFTA encouraging foreign investment, the tax structure and the peso devaluation helped promote growth in the maquiladora export sector throughout the 1990s. Much of the growth occurred away from the border in states like Aguascalientes, whose maquila growth outpaced the nation’s.

**Table 2. Number of Export Maquiladoras in Mexico, Aguascalientes and Border States, 1990 – 2001**

Year	Mexico	Aguascalientes	% of the Total	Border States	% of the Total
1990	1,703	4	0.00%	1,527	89.62%
1991	1,914	4	0.00%	1,693	88.43%
1992	2,075	4	0.00%	1,828	88.09%
1993	2,114	6	0.00%	1,848	87.38%
1994	2,085	8	0.00%	1,801	86.35%
1995	2,130	29	0.00%	1,776	83.36%
1996	2,411	49	2.01%	1,974	81.88%
1997	2,717	65	2.39%	2,204	81.11%
1998	2,983	73	2.43%	2,367	79.35%
1999	3,297	89	2.70%	2,552	77.39%
2000	3,590	89	2.48%	2,759	76.85%
2001	3,729	93	2.49%	2,860	76.70%

Source: INEGI, *Statistics of the Maquiladora Export Industry*.

The number of people employed in Aguascalientes maquiladoras grew by more than 3,000% from 1990 to 2000 (See Table 4). The majority of these employees are in the textiles, apparel and leather subsectors, and most are women. Much of the earlier investment in maquiladora production was designed to take advantage of low wages, and utilized little integration with local inputs and produced little value-added (apart from the labor itself). In addition, in the late 1990s, a greater number of maquiladoras began to move outside the capital municipality to neighboring municipalities like Jesús María and San Francisco de los Romo where salaries are slightly lower. Still, more recent maquila production shows some evidence of increasing the number of professionals employed, increasing the use of local inputs, offering more training and transferring more technology. For example, imported inputs fell slightly, from about 94 percent in 1996 to

91 percent in 1999, indicating a slight increase in the use of national inputs. Still, maquiladoras continue to be connected almost exclusively to international suppliers and markets.

**Table 3. Employees in the Maquiladora Export Industry in Aguascalientes**

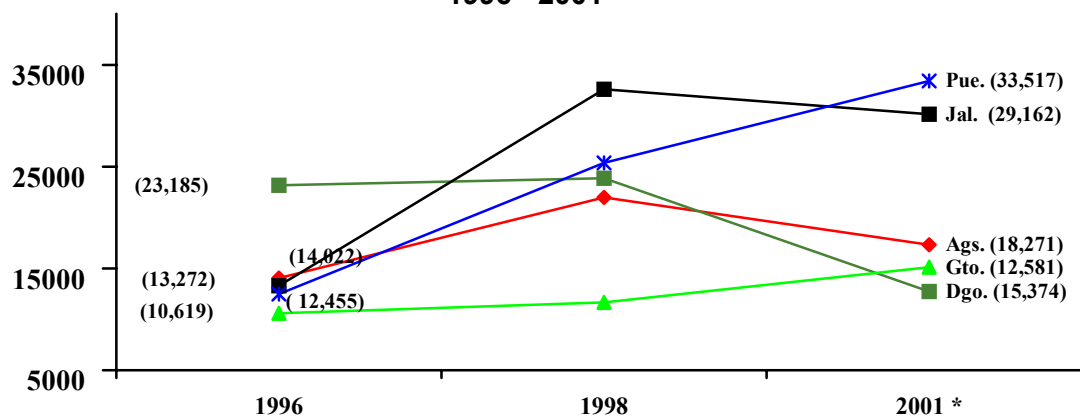
Year	Total	Textiles, Clothing and Leather
1990	828	828
1991	828	828
1992	828	828
1993	2,468	2,468
1994	5,388	5,388
1995	8,158	7,929
1996	12,321	11,918
1997	17,384	16,876
1998 p/	19,859	19,339
1999 p/	24,632	23,992

p/ Preliminary Figures Source: INEGI. General Bureau of National Accounts.

About 90 percent of the maquiladora employees in the textile sector are direct production workers, but their salaries only represent about a third of the total value added. While salaries have increased in terms of their percentage of value added over the last five years, the payment discrepancy between line workers and technical and administrative staff has continued to be severe. Thus, in 1990, average white collar salaries were 3.27 higher than worker salaries. In 1999, average administrative salaries were still 3.29 time higher than workers, indicating that despite some rise in median income, the gulf in incomes between the two classes of workers remained wide.

The recent recession hit the maquiladora industry in both the nation and the state hard. For example, preliminary data indicates that in March of 2002 there were some 40 percent less jobs in the state in the maquiladora industry than exactly a year before. Only Baja California and the State of Mexico saw a larger proportion of job losses. Overall, according to figures provided by the Social Security Institute, nearly 10,000 jobs were lost in the manufacturing industry, with nearly 9,000 of them lost in the maquiladora sector in Aguascalientes (see Figure 8).

**Figure 8. Changes in Number of Employees in Maquila Industry by State, 1996 - 2001**





## **Governmental Support of Economic Development**

The government of Aguascalientes has made a tremendous effort to increase the number of maquiladora export facilities and foreign investment in general in the state. The state Commission on Economic Development and Foreign Trade (CEDECE) and the Secretary of Economic Development promote foreign trade and provide information to exporters. In 1993, the state government initiated an Economic Deregulation of Business Activity Program, with the object of facilitating investment and attracting industry. Within this program, the state government has established a single-stop window for all administrative permits and application procedures.

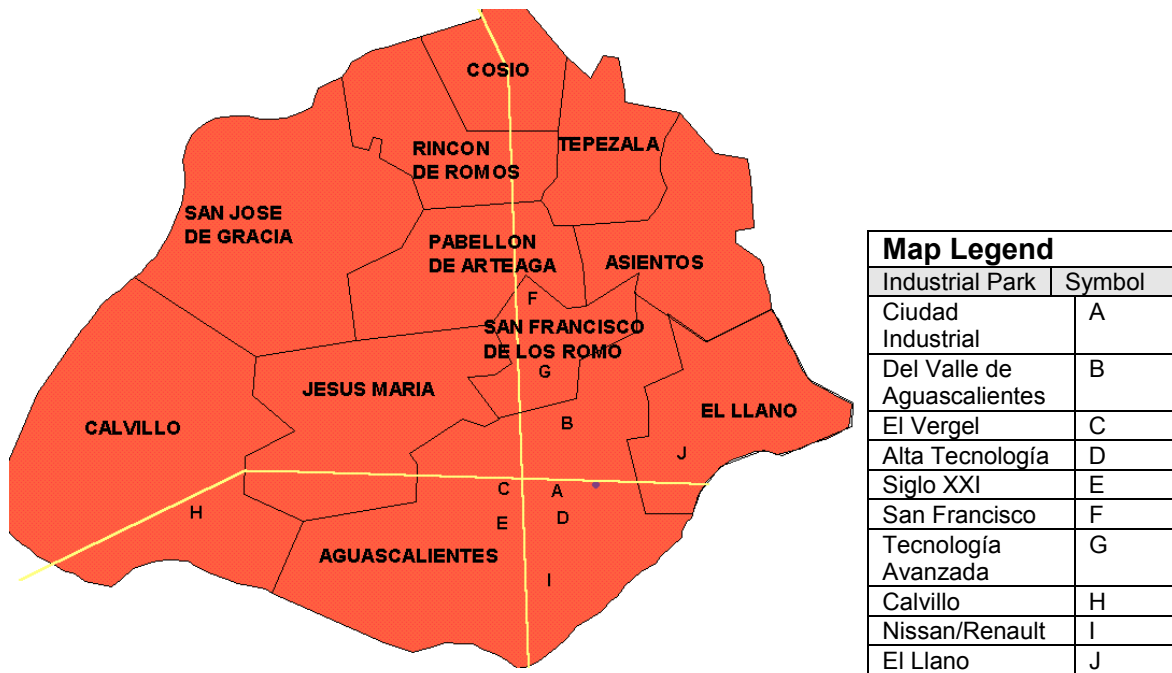
A number of other measures – including a state-supported Institute for Business Competition, an incubator program, a grant program for graduate work by business professionals – have helped foment a positive business climate in the state.

In addition, to attract business, the state has in some cases eliminated a two percent payroll tax, forgiven local property taxes and facilitated and subsidized the extension of services and infrastructure including energy, natural gas, water and telecommunications to individual industries and industrial parks. Municipalities in Aguascalientes have also offered subsidized rates for some basic services.

In addition, medical assistance, training of new employees and other state services have also been used as a way to promote job growth in the state. In Aguascalientes, the government and private industry have collaborated to build a series of industrial parks near major transit lines, including the North-South axis (see Map 2). Currently, the state government is promoting the location of new industries in the industrial parks located north of the capital to avoid further urbanization of the capital center. At the same time, the state government has sold Aguascalientes as a state with practically no air, water or land pollution, an increasingly dubious statement.

The eagerness to attract foreign industry has become the major impetus of state economic policy in Aguascalientes, above other economic criteria such as social equity or growth with social development. And the maquiladoras, responding to the ebbs and flows of the market, and constantly engaged in analysis of cost and regulatory structures, are ready to leave behind their factories at a moments notice. Proof of this is that during 2001, more than 40 maquiladoras closed either temporarily or permanently in response to the declining world economy.

**Map 2. Municipalities, Principal Highways and Industrial Parks in Aguascalientes**



## ***V. Aguascalientes: An Environmental Profile***

This section examines the direct and indirect impacts industrialization has had on the region's environment. Direct impacts might include the toxic emissions, hazardous waste generation and water use. Indirect impacts could include the increase in the use of water and in the generation of solid waste in municipalities which have grown as a result of the attraction of industry. Nonetheless, due in part to unavailable information, it is not possible to determine with certainty the impacts of industrialization on the environment. There are, however, certain issues that concern the population of Aguascalientes, such as particulate matter levels in the air, scarcity of water, lack of public information and inadequate hazardous waste management. The major problems facing the state currently are the reduction in the quality and quantity of water, desertification and deterioration of air quality.

Part of the difficulty in assessing the direct and indirect impacts of industrialization are that unlike the border region – which has witnessed 20 to 30 years of industrial development – industrialization in Aguascalientes is a relatively recent phenomena. In addition, it is only in the last few years that both the federal and state government have begun to collect information about hazardous waste generation and toxic emissions. In fact, for many years state and local authorities deferred regulation of the maquiladora industry – as well as the automotive industries – which have led the industrialization of Aguascalientes – to federal authorities. It wasn't until the end of 2001 that Mexico passed federal legislation requiring such businesses to turn over information about toxic emissions, though a “voluntary” program had existed previously.

To be sure environmental problems predate NAFTA and the new arrival of maquiladoras. For more than a quarter of a century, the lack of water in a state whose slogan in its coat of arms is “clear water, clean sky and good people (agua clara, cielo limpio y gente buena)” has been a major concern. Still, there is little doubt that the recent arrival of maquilas and other industries supported by foreign investment has increased this concern, in addition to the more immediate concerns of the illegal dumping of waste, toxic air emissions and wastewater discharges.

In recent years, the state of Aguascalientes has taken some steps to curb the negative impacts that industrialization has had on its natural resources and environment. Recent state laws recognize these new challenges, and new efforts are being made to deal with their consequences. According to governmental objectives, these efforts focus on four areas: protecting and rationally using natural resources, efficiently using water, rehabilitating major rivers and adequately managing municipal and industrial waste. State law now requires that both industries regulated by the federal government and those regulated by the state report their emissions and hazardous waste generation to a pollution release and transfer registry. In addition, state environmental officials and municipal leaders have begun to make water use a major condition of attracting industry. While this attention to water use is new and still being developed, it is a major shift in policy in the state.

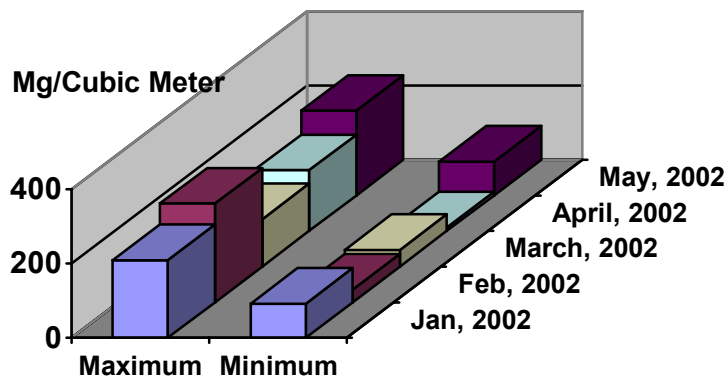
Nonetheless, serious obstacles remain to making consideration of the environment and quality of life key issues in the state. Citizens who organize and oppose industrial or waste projects are often branded by leaders as being opposed to all development, while the major media outlets continue to ignore most environmental issues.

In general, the state and its policies concentrate more on attracting industrialization and connecting to the world economy than on mitigating the harmful effects of industrialization. While the recent adoption of a new state environmental law is a positive step, this law has regulatory gaps and needs strengthening. In addition, governmental objectives have lacked the resources and the enforcement necessary to achieve meaningful results.

### **Air Quality: A Growing Concern**

In terms of air quality, the environmental control division of the Secretariat of Social Development (SEDESO) reports that contaminant gas levels in the city of Aguascalientes do not exceed maximum permissible levels for nitrogen oxide, sulfur dioxide or ozone. In recent years, however, total and respirable particulate matter concentrations have violated the standards, particularly in 2001 and 2002. As an example, daily levels of respirable particulate matter averaged 185 mg per cubic meters in January of 2001, well above the 150 mg/cubic meter standard (equivalent to the U.S. standard). Particulate matter comes from unpaved dirt roads, wood burning, the burning of tires and other wastes in brick making kilns, automobile and truck engines, heavy industry and power plants. These particles can cause severe damage to the respiratory system, particularly when they are attached to toxic substances.

**Figure 9. Maximum and Minimum Daily Readings of Respirable Particulate Matter in City of Aguascalientes, Jan-May, 2002**



*Note: Daily standard for respirable particulate matter – particulate matter less than 10 microns -- is 150 mg/cubic meter.*

*Source: State Government of Aguascalientes. Secretaría de Planeación. Información estadística de Aguascalientes (CIFRA). Aguascalientes 2002.*

### **Urban Deterioration and Decay**

According to experts, Aguascalientes' industrialization process actually began with decisions taken in the 1960s and later reaffirmed in the 1980s to create a series of industrial zones and parks to the west of the capital city. Later, the City of Aguascalientes began instead to reorient industrial growth to the south, toward the airport. Whatever the decisions made by planning departments and directors, industrial growth in Aguascalientes has largely moved along a north-south track, closely following

the railways and pan-american highway, which links Aguascalientes with Mexico City, Guadalajara, León, Ciudad Juárez, Matamoros, Nuevo Laredo and Tijuana.

In addition to the transportation infrastructure and creation of industrial parks, industrial development occurred as a result of property tax exemptions, including a number of decisions to allow industries to locate in areas which were not properly zoned for industrial development. More recently, the 1992 constitutional amendments which allowed farmers to sell communal, ejido property has spawned a speculative industry as farmland is sold off to industrial developers.

All of these decisions have resulted in an industry which is still highly concentrated in the capital municipalities with some extension into outlying municipalities. Rather than promoting the development of intermediary cities, the policy has created a spreading, sprawling megalopolis, straining basic services and fragmenting what was previously farmland throughout the Valley of Aguascalientes.

### **Water Resources and Use**

One of the most serious concerns for the Aguascalientes population is water scarcity. Being a semiarid zone, Aguascalientes does not have large, above-ground water sources, but instead relies on riverbeds and drainage areas (see Map 3). The most important river is the San Pedro, or Aguascalientes, which starts in the state of Zacatecas and crosses the state from north to south to empty into the Río Verde, west of the capital. The Río Calvillo – transecting the south of the state -- is also relatively important, with an annual flow of 50 million cubic meters.

Apart from these major surface water resources, Aguascalientes is home to five major aquifers. These five main aquifers have been mined, with annual extractions reaching an alarming 546 million m<sup>3</sup>, or nearly double an estimated average natural recharge of 300 million cubic meters per year. This unchecked water use has largely destroyed the thermal waters that gave Aguascalientes its name.

Despite the scarcity of water in Aguascalientes, throughout the later half of the 20<sup>th</sup> century, the state government supported agricultural development through intensive irrigation of crops. Using both aquifers and water from the reservoirs developed between 1930 and 1985, water use for crop irrigation increased dramatically between 1950 and 1996, as the number of hectares planted rose from some 13,000 hectares to nearly 55,000. By 1999, the total number of hectares planted slowed to about 46,000. Not surprisingly, use of the aquifers has increased in times of drought, compounding the problems.

### Map 3. Rivers and Dams of Aguascalientes

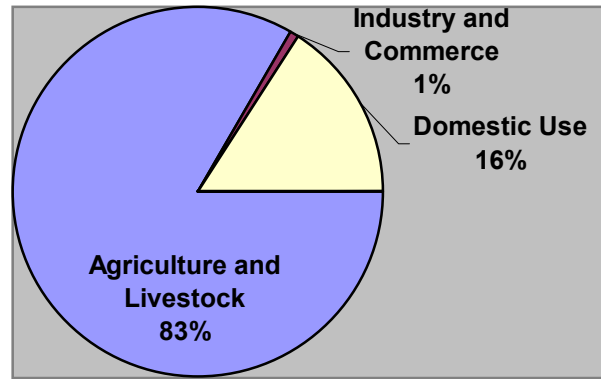


Source: Image - Web site, INEGI.

While most water use – whether on fields or in homes – is not measured precisely, one study estimated that in 1996, over 845 million cubic meters of water were utilized. Agriculture accounted for a total of 704 million cubic meters of water, or about 83 percent of all water used that year. Nearly 80 percent of this total came from aquifers. Residential users in municipalities used another 16 percent of the total, while industry and commercial entities used slightly more than one percent. It should be noted that in

the city of Aguascalientes, recent figures show the industrial and commercial sector use a much greater percentage of the water than in the state as a whole.

**Figure 10. Estimated Water Use in 1996 in Aguascalientes by Sector**



Note: Total estimated use was approximately 845 million cubic meters  
Source: Joaquín Soa, Ubaldo Muñoz, Jesús Sigala, “El Agua y la sustentabilidad del desarrollo en Aguascalientes,” Cuadernos de Trabajo No. 73, Gobierno del Estado de Aguascalientes, julio-agosto, 1997

Water has been used inefficiently in the domestic, industrial and agricultural sectors. For example, about half of the residences in the capital city lack water meters, and it is believed that some 40 percent of water used is actually the result of leaks and breaks. Industries such as Nissan were characterized by excessive water use in the early 1990s. Over time, however, large industries in Aguascalientes have lessened their use of water, in part responding to the high cost of water. Of water that is measured in the City of Aguascalientes, in 2000 about 87 percent was used by residents, 10 percent by commercial establishments, and three percent by industry. To resolve inefficient water use in the domestic and industrial sectors, the city of Aguascalientes has started a program called “Aguascalientes: Water Saver” (“*Aguascalientes: Ahorrador de Aguas*”). The goal of the program is to save 2.5 billion liters of water annually in the domestic sector.

### **Water and Sewer Service**

With industrialization and population growth came increased water and sewer service in Aguascalientes. In total, through nearly 200,000 connections, more than 95% of the population receives potable water. The majority of the water used in Aguascalientes comes directly from wells and is not treated. In fact, Aguascalientes has only one water treatment plant, located in San José de García.

In terms of sewer service and wastewater treatment, more than 90 percent of the population is connected to sewer service. Much of the population that does not have connections to municipal sewer lines are located in rural areas or in recent “irregular” squatter settlements. There are a total of 93 municipal wastewater treatment plants in

Aguascalientes, 80 of which were operating in 2000. Most of them utilize facultative lagoons to treat the wastewater. By far the largest is the capital wastewater treatment plant, constructed in 1993. In fact, it is the second largest treatment plant in all of Mexico. Both commercial, industrial and domestic wastewater is treated here, and the discharge flows directly into the San Pedro River.

While some 350 industries connect to these municipal sewer and treatment systems, others utilize their own treatment plants. Others appear to discharge wastewater directly into rivers and streams without treatment. According to the National Water Commission, there were 24 industrial wastewater treatment plants in Aguascalientes in 2000, of which 22 were in operation. Of the 22, only seven complied with the established wastewater discharge standards, threatening the water quality, public health and ecosystem health of the state.

Water and wastewater service has been operated in the City of Aguascalientes by a private company called CAASA. Due in part to the scarce water supply, as well as to the high debts the company has incurred through loans with the National Commission of Water (CAN), the company has approved a series of rate hikes in domestic, commercial and industrial water fees. For example, the current water fees in the residential sector of Aguascalientes are five times higher than the average among Mexican state capitals. Similarly, industrial water rates are also among the highest in Mexico. The high rates have led to a high amount of nonpayment, which in turn has forced the company to announce new rate hikes in the coming years. Unfortunately, the “privatization” of water service in Aguascalientes has thus far not been a success story in Aguascalientes.

Although there is little information about water quality in Aguascalientes, municipal and industrial wastewater discharge, as well as runoff from urban streets and agricultural fields have negatively impacted water throughout the state, and particularly in the capital. The waters of the Río San Pedro are contaminated by the runoff and wastewater discharges from Cosío, Pabellón, Jesús María, Rincón de Romos, San Francisco de los Romo and of course from the capital city itself. Currently, the state and city government have begun a program to “restore” the river. Similarly, the Presa Niágara, the reservoir that helps supply city water, also receives direct discharges resulting in a high organic content. The Río Calvillo is similarly affected, if to a lesser extent.

While industry is not a major consumer of water in Aguascalientes, it is a major discharger of pollutants and is a leading cause of water pollution. In industrial zones, wastewater discharges exceed the permit standards frequently. City sewer lines in some cases have corroded because of industrial discharges. Back in 1995, a local municipal water commission found that 36 industries or businesses were contaminating the city sewer system with unauthorized discharges, leading to high biochemical oxygen demand, dissolved solids, oils and greases and even high levels of aluminum and other metals.<sup>4</sup>

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<sup>4</sup> State of Aguascalientes. 1995. Secretaría de Desarrollo Social, Subsecretaría de Ecología, Anexo 2: *Informe sobre el estado del medio ambiente en Aguascalientes*, 57-58.



## **Generation of Municipal Solid and Hazardous Wastes**

In recent years, due to the rising generation of municipal solid waste, the state has invested in the construction of three transfer stations, which take solid waste from throughout the capital city to the landfill in San Nicolás, the only landfill built to specifications. About 26 tons a day are transported to the transfer stations.<sup>5</sup> Other open-air dumps have been closed over the past few years in outlying municipalities.

In terms of industrial and hazardous wastes, there has been less government action. Although there are (or were) almost 100 maquiladoras, and more than 3,000 manufacturing companies overall in Aguascalientes, there is very little public accessible information about the quantity and type of hazardous waste being generated in these facilities. Although by law these industries are expected to file a biannual report on the generation and management of industrial wastes with federal authorities, nationwide, estimates show that only about 27,000 out of 100,000 companies that potentially produce hazardous wastes have been reporting. Within Aguascalientes itself, 608 companies reported generating less than 10,000 tons of hazardous wastes. A 1994 report found that 64 companies operating in Aguascalientes were generating more than 58 types of hazardous and nonhazardous wastes, and that almost 45 percent of this waste was receiving no treatment.<sup>6</sup> Both in Aguascalientes and the nation as a whole, it is assumed that the quantity reported represents only a fraction of the amount generated.

**Table 4. Number of Companies Reporting and Quantity of Hazardous Wastes Generated, 2000**

	<b>Number of Companies Reporting</b>	<b>Quantity of Hazardous Wastes Generated (tons)</b>
Mexico	27,000	3,700,000
Aguascalientes	608	9,554

Source: National Institute of Ecology, July 2000;  
(<http://www.semarnat.gob.mx/dgmic/rpaar/rp/volumen/volumen.shtml>).

## **Hazardous Waste Management in Aguascalientes**

There are no firms in Aguascalientes authorized to deposit or incinerate hazardous wastes. Currently, there are three firms that collect and transport such wastes as well as a solvent recycling operator and on-site waste treatment. A total of seven companies are permitted to treat, store or transport hazardous or biological waste in the state. These companies clearly lack the capacity to manage all the hazardous waste generated in the state.

Attempts by various companies to establish storage or treatment centers in the state have been unsuccessful, due to public opposition and concerns about potential environmental and health effects. In 1998, Ecosistemas El Llano bought almost 235 hectares in the municipality of El Llano with the intent of building a storage facility for hazardous wastes. Ecosistemas El Llano is a firm with investments from the Metalclad

<sup>5</sup> Information from the Office of the Governor, 3<sup>rd</sup> Annual Report, 2001.

<sup>6</sup> State of Aguascalientes. 1995. Secretaría de Desarrollo Social, Subsecretaría de Ecología, Anexo 2: *Informe sobre el estado del medio ambiente en Aguascalientes*, 56.

Corporation of California and from Browning Ferris Industries, one of the world's largest municipal waste management firms. Due in part to fierce community opposition, Ecosistemas El Llano never received the necessary permits for its facility. According to the company, the inability to establish a storage facility in Aguascalientes – and a similar failure in the state of San Luis Potosi – caused Metalclad to remove its investments from Mexico.

Metalclad Corporation had received federal permits to open a storage facility in Guadalupe, San Luis Potosi, but a denial of permits by municipal and state governments stopped the project. In protest, Metalclad presented an expropriation complaint under NAFTA's Chapter 11 through the International Center for Settlement of Investment Disputes. On August 30, 2000, a panel of three ICSID "experts" handed down a decision forcing the Mexican government to pay Metalclad \$16.685 million. The panel decided that the state's enforcement of its environmental laws was a form of expropriation, since it had prevented Metalclad from opening the facility. After an unsuccessful appeal to the state supreme court of British Columbia, the federal government of Mexico paid Metalclad \$16.002 million.

After its success in the case of the hazardous waste storage facility in San Luis de Potosi, Metalclad announced that it is considering bringing the case of Ecosistemas El Llano before a Chapter 11 arbitration panel as well. Metalclad argues that it took all legal steps necessary to open the facility in Aguascalientes and – due to arbitrary decisions – could not do so. As of the writing of this report, Metalclad had not presented a complaint.

Still, other observers note that it was Metalclad itself that withdrew from pursuing the construction of the site after opposition arose and after it was told it would need to do a full environmental assessment. People opposed the project because they were understandably suspicious since the company never revealed the full extent of the operation or provided information needed to reach a decision. One of the lessons of Metalclad's experience in Aguascalientes is that without reliable information, and without a full account of hazardous waste generation in the state and in all of Mexico, it will be difficult for citizens to accept a hazardous waste site in their own backyard. Social consensus and reliable information are needed for such operations to exist in Mexico.

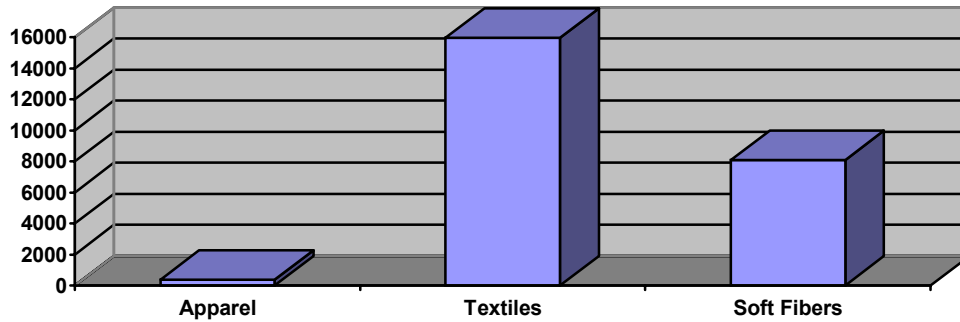
### **Industrial Toxic Emissions and Transfers**

Recently, at the federal level, new laws were approved which will require most major industries to report the generation of hazardous wastes, toxic emissions and wastewater discharges to federal authorities. Previously, the system had been largely voluntary and few industries participated. Regulations must still be established for the federal program to become operational and ultimately accessible to the public. At the same time, a few years ago, Aguascalientes became the first state to establish its own obligatory Pollutant Release and Transfer Registry (PRTR or known as RETC in Mexico). (See box in Text)

The first RETC in Aguascalientes was recently completed. About 40 percent of the firms participating were from the textile and apparel industry, with another 13 percent from the automotive and auto parts industry, and 10 percent from the food and beverage sector. While the initial results are still being analyzed and assessed, a preliminary analysis shows that the textile, apparel and fiber industries generate significant amounts of hazardous wastes, air emissions and wastewater discharges in both Aguascalientes and Jesús María. In addition, the initial report showed several chemicals of concern, such as

nitric oxides being emitted to the air. Still, until future RETC are completed both at the state and federal level, it will be difficult to surmise whether this pollution is increasing or decreasing or whether the reporting is accurate.

**Figure 9. Tons of Emissions of Criteria Air Pollutants Reported in Municipality of Aguascalientes by Sector, 1999**



*Note: Criteria Air Pollutants include Carbon Dioxide, Sulfur Dioxide, Nitrogen Oxides, Carbon Monoxide, Hydrocarbons and Particulate Matter.*

*Source: State of Aguascalientes RETC, Reporting Year 1999.*

## **Aguascalientes takes the initiative**

**By Talli Nauman**

When Miguel Ángel Torres requested information for his research grant on the environmental impact of textile companies in Aguascalientes, state authorities provided him emissions data that no other state government could. That's because Aguascalientes is the only one of Mexico's 32 states with its own working pollutant release and transfer register (PRTR). "I am glad my grant was for research in Aguascalientes," says Torres, an economist at the National Statistics, Geography, and Data Processing Institute.

Now in its third year of operation, the mandatory reporting system offers comparative data from the nine industries under state jurisdiction from textiles to printing to baking which account for 75 percent of the fixed pollution sources in the state.

Data is collected for 160 contaminants, 56 more than in the currently voluntary federal register. Another advance is that it packages the information in an accessible format, with user-friendly photos and summary profiles of individual plants.

For the moment, Aguascalientes's register covers 175 businesses, though that number will grow under reforms to the federal environmental law. The reforms not only require that Mexico's national PRTR become mandatory and public for all industries -- whether under federal, state, or municipal jurisdiction -- but they continue a move to decentralize authority over environmental matters. What this means for PRTR is that states with the capability will assume certain federal responsibilities, including registering federally-regulated industries located within their borders. In Aguascalientes, that could raise the number of registered enterprises to about 700. The range of substances for industries under federal jurisdiction remains to be determined.

"The PRTR is one of the reasons we want decentralization," says Marco Antonio Acero Varela, head of Aguascalientes's Ecology Undersecretariat.

Once Aguascalientes takes over the new industries, according to state officials, it will be able to release that data without federal permission, use it to build an exchange bank for firms trading their waste products for recycling, and improve local inspection and enforcement efforts. Toward that end, the federal government has agreed to chip in about US\$14,000 of the state's \$23,000 PRTR budget this year. Other states are receiving help as well, keyed to the size of their individual projects: US\$10,000 for Colima; \$17,000 for Durango; \$17,000 for Michoacán; \$4,800 for San Luis Potosí; and \$6,000 for Tlaxcala.

Aguascalientes will be the first state to take on the new responsibilities, says Raúl Arriaga, the environmental undersecretary at Semarnat. The changeover is expected within a year, beginning with automobile manufacturing, the state's largest industrial sector, according to Armando Aguayo Patiño, environmental verification chief for the Ecology Undersecretariat. State authorities are hoping to establish a regional database by sharing their mandatory reporting system with neighboring states. So far, they have done so with officials in Durango, Colima, Guanajuato, the state of Mexico, Tamaulipas, and Yucatán.

"All we ask is that they ask us for it," says Aguayo.

*Source: This article was originally published in TRIO, a publication of the North American Commission on Environmental Cooperation in Spring of 2002. Available at <http://www.cec.org/trio/stories/index.cfm?ed=7&ID=88&varlan=english>*

## **Environmental Laws in Aguascalientes**

Like many Mexican states, Aguascalientes has its own state environmental legislation. In 1993, the state ratified the General Law of Ecological Equilibrium and Protection of the Environment of Aguascalientes. This Law was replaced by the Environmental Protection Law in 2000, which reflected some of the 1996 structural changes to the Federal General Law of Ecological Equilibrium and the Protection of the Environment (LGEEPA). Additional changes in 2001 increased the move toward decentralization of authority toward the states.

The state law delegates the enforcement of environmental issues to the governor, the city councils and the Secretary of Social Development. It also guarantees citizen access to environmental information – with some conditions -- establishes environmental criteria for municipal programs to follow and codifies the procedures for evaluating potential environmental impacts. Like the federal LGEEPA, the state law outlines two mechanisms for evaluation: the Environmental Impact Assessment (EIA) and the preventive report. Facilities or projects that pose potential environmental impacts – but that do not require federal evaluation – must submit an EIA to state authorities. Proposals with less risk of environmental impacts require a preventative report and, occasionally, an additional risk assessment. *Public participation is these processes, is not, however, obligatory as authorities have discretion over whether to hold public hearings and companies – under certain conditions -- may specifically request that some information be kept confidential.*

The Law creates an “environmental fund” used to promote self-regulation and environmental auditing programs for companies that agree to participate. These companies must agree to comply with more stringent regulations than those required by existing legislation. In addition, the Aguascalientes law establishes the procedures to create protected areas and sets up norms for the sustainable use of natural resources, including water, soil, flora and fauna.

A section on environmental information, citizen participation and a citizen grievances process includes the establishment of a state environmental information system and the formation of a State Consultive Council on Environmental Management. The council is made up of representatives from the governmental, academic, private and non-profit sectors.

Despite these formalities, citizen requests for environmental information can be rejected for several reasons, including the authorities’ decision that the subject matter is *confidential*. In practice, these exemptions have made it easy for authorities to deny petitions for environmental information.

Finally, the law establishes sanctions, enforcement orders and inspections.

As in the rest of the country, Aguascalientes’ environmental laws have been established and strengthened long after industrialization and economic growth has been fostered through national programs and NAFTA. As such, these laws are often seen as secondary laws, often only partially enforced. In addition, environmental education in Aguascalientes is in its initial stages and there is not a strong recognition of the environmental and health damage that industrial activities can create.

Nonetheless, these new laws are clearly needed, as are their compliance and enforcement. While many of the larger corporations do appear to respect and abide by these laws, overall compliance and enforcement are – with the limited information available – assumed to be spotty.

Citizen participation in environmental issues has also increased over the last decade in Aguascalientes, exemplified both in the participation in environmental advisory committees and in discussions about specific issues like water or hazardous wastes. It should be noted that this participation is both encouraged and supported by the present law, which wasn't the case in the past. Still, the right to know is still routinely ignored by governmental authorities, or the law is used to deny access to information based on trade secrets or "security" concerns. More detailed regulations are needed to minimize those cases where some information must remain secret.

The proposal to create a new government office, the state attorney general for environmental protection, might improve enforcement of environmental laws if adequately funded. This would ease the strain on the federal attorney general, who has less than 10 inspectors and a few vehicles to cover the hundreds and thousands of industries now operating in the state (among other environmental issues).

Beyond this proposal, new regulations should be passed at the state level to require the proper reporting, and management of hazardous wastes by the maquiladora industry, as federal requirements continue to be ignored. As part of this effort, environmental education and citizen participation in all aspects of life –including on the factory floor – are also needed. As maquiladoras spread across Aguascalientes, more oversight by citizens and by authorities will certainly be needed to ensure environmental compliance.

While these improvements are needed, Aguascalientes is not starting from scratch. It has already been recognized by federal authorities as the state which has the most complete program of environmental decentralization, evidenced by the state-level RETC (or PRTR). It's up to citizens to keep pushing government to bring environmental laws and enforcement in line with economic programs and incentives.

## **VI. General Conclusions**

The industrialization process has had an economic and social cost in Aguascalientes. It has helped alleviate extreme poverty for thousands of families but it has not been the economic lever to assure their well-being, nor a means to provide fiscal resources to the local and state governments to pay for the costs associated with the additional infrastructure needed for industrialization to occur.

This has been part of a strategy implanted by the state to attract investment and keep a stable labor climate. Strikes are avoided through individual agreement, instead of collective bargaining, or through intimidation, layoffs, and financial disincentives.

Despite its benefits – jobs, salaries, working housing -- the export maquiladora industry is suddenly drying up and disappearing even more quickly than it arrived. There are several reasons. First, the economic downturn in the U.S. has been much longer and deeper than anticipated, leading to the inevitable loss of jobs and closing of factories. But another factor is more structural. Mexico is losing what economist term competitiveness with other countries emerging in the world economy. The application of

more fiscal and tax obligations, and a relative increase in salaries, leading to a slight increase in production costs, has made companies rethink their ability to stay in Mexico and maximize their profits.

From time to time the federal government announces the creation of new rules for the operation of maquiladoras and this is one of those moments. Although NAFTA allows maquiladoras now to sell their product nationally and phases out some of the fiscal and tariff benefits, it appears that the government will postpone these decisions about the program until 2005, and instead will apply new measures to attract more maquilas and attempt to keep more maquiladoras from shutting their doors. An announcement is expected soon.

Still, some maquiladoras may prefer an exit strategy -- some have already taken it -- to other greener latitudes where sufficient, cheap resources -- labor and other -- are guaranteed and where profits can also be guaranteed. The new destinations are Central America, the Caribbean and, increasingly, China.

In this context, the new economic reality poses a risk to the apparel and textile industry. The voices of this industry in Aguascalientes express their concern about the entrance of China into the World Trade Organization, which could signal the entrance of massive amounts of Chinese goods into the Mexican and U.S. market. Clothes are already in Mexico, legally or not, at low prices. It's often of inferior quality, but to a population with low incomes, it is a good option. Free trade impacts the interests of local producers.

The establishment of maquiladoras or other industries in Aguascalientes has not appeared to prevent the emigration of workers to the U.S., both from rural zones, as well as young professionals graduated from universities, who are attracted by the higher payoffs in the U.S., compared to what foreign companies are paying.

The maquiladoras in Aguascalientes have not helped foment or respect worker rights here. There are no true unions in maquiladoras, and workers often are unaware of who might represent them collectively before factory owners. Unions that do exist are often embroiled in corruption and financial scandals.

Against this culture of ignorance, corruption and disrespect for worker rights, various worker rights organizations and some union leaders have proposed the creation of an ombudsman to defend worker rights, similar to those that oversee the defense of human rights.

Perhaps the future of worker rights would be for workers to organize in a global scheme, parallel to the workers organized in the U.S., Asia or Europe. This has occurred to some extent in the automotive and tire sectors. The work is challenging, but is necessary since maquiladoras currently operated in obscurity and are able to evade worker rights in a way that is not possible in their countries of origin.

There are of course other important industries in Aguascalientes such as the electronics and automotive industry. Here, Aguascalientes will need to continue to compete -- as it has thus far done -- against other Mexican states and other countries to offer highly skilled labor and adequate infrastructure in telecommunications.

But a better option for industrial development is the strengthening of programs to help small and medium-sized businesses, so that they can compete on equal grounds with companies supported by foreign investment, both in Aguascalientes and around the world. It is precisely these small and medium-sized industries which actually generate the largest number of jobs and strengthen internal markets.

Part of this strategy must involve the integration and permanence of productive chains so that more of what is produced by large industries is local in origin. It seems ludicrous and incoherent to continue to attract foreign investment which relies almost exclusively on imports from abroad for what is being produced in Mexico. Of course, as part of this strategy, the quality and timeliness of production of local producers must improve.

Progress has been made in Aguascalientes in terms of environmental education. From primary school the importance of taking care of the environment and natural resources is stressed. More businesses and industries have begun leading their own workshops on the importance of taking care of the environment, in hopes that workers will apply the lessons in work, home and in their neighborhoods. Nongovernmental organizations continue to work hand in hand with the federal, state and local governments in developing proposals and actions intended to improve environmental health. But corruption and the continued lack of access to environmental information continue to pose challenges.

Although the fear exists that maquiladoras in Aguascalientes neither adequately manage or return their industrial wastes, no one dares point the finger at individual factories. There are no official numbers, nor information about environmental compliance, or only estimates. It is imperative that laws designed to ensure reporting of waste generation, something that is now quite possible with the federal adoption of an obligatory Pollutant Release and Transfer Registry (PRTR), are enforced. Environmental improvement must start with the industries themselves, who should take into account the impacts they have upon the environment, and the resulting social and environmental costs. Accounting devices like the Environmental Net Internal Product should be part of this effort to internalize the ecological costs of doing business.

The absence of these evaluations prevent correct and socially acceptable decision-making. The recent possibility of constructing a hazardous waste transfer station and landfill in Aguascalientes was only possible as long as the population was ignorant of the possible benefits or costs of such an undertaking, as well as the impacts on the particular site selected.

In recent years, the population has more actively engaged in successful fights involving environmental and public health issues, and their voice in the discussion has grown in the media. There is much work to be done, but many lessons have been learned from these efforts.

The maquila export industry and other industries supported by foreign investment have played an important role in the state's industrialization and the growth of the service sector, including hotels, communications and transportation. But it is not a panacea. It encourages in-migration from rural areas and other states, and then encourages worker turn-over in part because of low salaries and the temporal nature of production, all of which have an impact on the extension of services and the use of natural resources like water, scarce in the region.



This industrialization has not been able to integrate other sectors into its productive process, generating little value added apart from the labor itself; it does not lead to a culture of respect for worker rights; and it does not fulfill its environmental obligations in terms of compliance or reporting. Yet this is the model which is being encouraged on a continent-wide level, through mechanisms like the Plan Puebla Panamá and the Free Trade of the Americas. The coin has been tossed, and Aguascalientes should serve as an example to avoid the same mistakes and propose alternative – sustainable – development strategies.

For more information

You can request the complete report, entitled, *Los efectos de la industrialización y del sector industria maquiladora de exportación en la economía, la salud y el ambiente en Aguascalientes*, available only in Spanish, from:

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