

GOOD BULBS,

BAD JOBS:

WORKERS AND CONDITIONS BEHIND  
YOUR NEW COMPACT FLUORESCENT

A REPORT FROM

POLICY MATTERS OHIO

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**POLICY MATTERS OHIO**, the publisher of this study, is a nonprofit, nonpartisan research institute dedicated to researching an economy that works for Ohio. Policy Matters seeks to broaden debate about economic policy by doing research on issues that matter to working people and their families. With better information, we can achieve more just and efficient economic policy. Areas of inquiry for Policy Matters include work, wages, education, housing, energy, tax and budget policy, and economic development.

## EXECUTIVE SUMMARY

A major supplier of compact fluorescent light bulbs to General Electric Co. requires many to work a 64-hour week that exhausts workers and violates Chinese labor law. Many workers at the plant in southern China, which is partly owned by GE, have no idea they are producing a product containing toxic mercury, and do not receive training on how to respond to its possible dangers.

Production and sales of compact fluorescent light bulbs (CFLs) are growing rapidly in the United States and world-wide. The energy bill approved by the U.S. Congress in December mandates the phase-out of current incandescent light bulbs and their replacement with more energy-efficient products. At least for the immediate future in U.S. households, that means CFLs. Yet very few of these products are made in the United States. Thus, U.S. consumers are increasingly going to have to buy products made offshore under conditions that may fall far short of international labor standards.

GE should use its Ecoimagination – the slogan for its strategy to produce “more energy-efficient, less emissive products” – to produce energy-efficient light bulbs in a way that does not abuse the workers who make them, and maintain a U.S. workforce to make some of these products.

Policy Matters Ohio commissioned this study, which was conducted in late 2007. It found that Xiamen Topstar Lighting Co. Ltd., a joint venture with Topstar in which GE has a stake, violates numerous provisions of China’s labor law at its plant in Xiamen, Fujian Province, including:

- Requiring work hours that are longer than the permitted maximum average in 2007 of 203.4 hours a month;
- Providing no pay stubs, so workers can’t tell if they are being correctly paid;
- Not paying overtime for work in excess of 8 hours a day or on the sixth day of work each week, which under Chinese law is to be a day of rest; and
- Mandating that workers who quit without permission forfeit a month’s wages.

These violations of Chinese labor law also infringe GE’s own corporate policies, which call for the company to obey local laws and expect suppliers to “comply with laws and regulations governing minimum wages, hours of service and overtime wages for employees.” Most of them also contravene the Electronic Industry Code of Conduct of leading electronics companies.

The plant also discriminates in employment, since it won’t hire workers over age 32 and hires almost exclusively women workers. This clashes with the anti-discrimination clause in the International Labour Organization’s Declaration on Fundamental Principles and Rights at Work, which GE has adopted with respect to its own employees working in China. In another abusive practice, the plant confiscates wages if a worker does not have approval for missing work or is late to work. For example, if a worker is half an hour late, she will be fined one day’s wages.

CFLs contain mercury, like other fluorescents, in order to function. Mercury is a well-known toxin, and mercury vapor can cause serious damage to the central nervous system. Though the amount of mercury in a CFL is small, the U.S. Environmental Protection Agency recommends opening a window and leaving the room for at least 15 minutes before beginning clean-up of a broken bulb.

Yet workers at the Topstar plant do not receive “a detailed account of work dangers” as their contracts stipulate, receive little safety training and often do not know basic facts about factory safety. The majority of workers interviewed told researchers they had no idea that the company was using mercury, or how to protect themselves. Told the meaning of the character for mercury, or *gong*, they said there were many plastic barrels on which “discarded objects containing *gong*” was written in red. The barrels were filled with CFLs and often were open or not properly sealed.

Experienced workers end up with swollen fingers from repeatedly pricking themselves with electronic components they are plugging in. Workers reported that when they finish their shifts, they ache all over and their legs have gone numb. One veteran worker said, “Ah, after more than a year [here], I am more or less numb all over and have become a machine!” Other workers interviewed made similar comments.

GE has been closing down production of incandescent light bulbs and parts, especially in Ohio, the long-time home of its lighting business and many of its factories. In October, it announced the closing of six plants employing 425 Ohio workers, as well as a plant in Brazil. It has argued that it cannot afford to produce the more energy-efficient CFLs in the United States.

However, the investigation of the Xiamen Topstar plant in Xiamen suggests that among the reasons GE can “afford” to produce them in China is because the joint venture is not following the norms of behavior that GE describes in its own *Citizenship Report* and its company code of conduct, *The Spirit and the Letter*. GE should follow its own policies, and ensure that its bulbs are made in a way that does not compromise the health and rights of the workers who make them.

The recently approved U.S. energy bill contains a number of measures that could support U.S. manufacture of energy-efficient light bulbs. Demand for CFLs is booming, so there is plenty of room for expanded production. GE has promised to make a high-efficiency incandescent bulb, but hasn't disclosed details on where it will be made. Making this or other new energy-efficient products under lawful conditions at its existing plants would show that the economic and environmental promise of green energy can truly be met. Meeting that promise also means taking care that CFLs and the mercury in them are properly disposed of. GE and other light-bulb suppliers should be required to participate in development of a recycling infrastructure for the products they sell.

## I INTRODUCTION

*“Maintaining high labor standards and a positive working environment in our factories and those of our suppliers is part of our core business values and corporate responsibility efforts.”*

-- General Electric Co., Jan. 17, 2007<sup>1</sup>

The promise of energy efficiency, along with renewable energy, has been heralded as the answer to climate change and the finite supply of fossil fuels. Investment in the green economy represents a tremendous economic opportunity. Compact fluorescent light bulbs (CFLs), in turn, are one of the easiest ways for consumers to save energy. They use 75 percent less energy than traditional incandescent bulbs and thus reduce the need for coal-fired electricity plants.

Despite enormous growth in sales, CFLs still fill only a small fraction of the 4 billion household sockets in U.S. households. Industry analysts predict additional big increases in CFL demand.<sup>2</sup> Such projections came even before the U.S. Congress approved the energy bill in December, mandating a changeover from less efficient incandescent bulbs. This should mean a boon to production of new, energy-efficient lighting, especially in Ohio, the traditional heartland of manufacturing for General Electric Co., the long-time lighting leader in the United States. This should be a win-win – mass production of a product with major energy-saving potential, providing jobs and rebuilding the economy of the Rust Belt.

The replacement for traditional incandescent household bulbs, at least for the immediate future, will be CFLs. However, very few of the high-volume household CFLs are made in the United States. Thus, U.S. consumers are increasingly going to have to buy products made offshore, usually in China. Indeed, GE and other producers have been shutting down plants here. Last October, GE announced it would close six Ohio lighting plants with 425 workers.

Policy Matters Ohio, a nonprofit research institute with offices in Cleveland and Columbus, arranged for research to be done in China on CFL production. Investigators in China interviewed 35 workers late last year at the GE-Topstar joint venture plant in Xiamen, Fujian province. Part II of this report contains their findings.

## GE’S LIGHTING BUSINESS

Lighting has been a part of the General Electric Co., of course, since its predecessor, Edison Electric Light Co. was organized in 1878 to “to own, manufacture, operate and license the use of various apparatus used in producing light, heat and power by electricity,”<sup>3</sup> Today, lighting accounts for only about \$3 billion of GE’s annual sales of \$173 billion.

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<sup>1</sup>“General Electric response to concerns regarding industry association positions on China labour law reform,” Business & Human Rights Resource Centre, 17 January 2007, <http://www.reports-and-materials.org/GE-response-China-labour-law-17-Jan-2007.doc>

<sup>2</sup>For instance, Freedonia Group Inc. predicted last summer that U.S. wholesale sales of CFLs would increase from \$415 million in 2006 to \$1.55 billion in 2011. See “His Bright Idea: Dominate Energy-Saving Light Bulbs,” by Kathryn Kranhold, *The Wall Street Journal*, Dec. 27, 2007, p. B1.

<sup>3</sup> Cox, James A., *A Century of Light*, The Benjamin Co. Inc., New York, N.Y., 1979, p. 33.

While the lighting business had been seen until recently as one of GE's laggards, it is not now, at least as a source of sales growth. In a presentation to Wall Street security analysts in January, GE Vice Chairman and Chief Financial Officer Keith Sherin identified the strength in the lighting business as the surprise of the fourth quarter and the year. "If you look at it, the CFLs are just selling everywhere like crazy," Sherin said.<sup>4</sup> The lighting business, he said, was strong globally and in the United States. GE does not break out results for its lighting business, but in 2007, its industrial sector reported a 9 percent gain in operating profit to \$1.7 billion, on revenues that declined 1 percent to \$17.7 billion. CEO Jeff Immelt boasted that overall, the company had returned \$25 billion to investors in 2007, plus approving "a very healthy dividend increase going into 2008." Asked at a December meeting with Wall Street analysts why the company wasn't putting more money into lighting, Immelt said, "...I never thought I'd be sitting in an investor meeting and have somebody begging for more lighting."<sup>5</sup> While lighting may not be one of GE's most profitable businesses, it is certainly a growth business with a future.

GE's Ohio plant closings result in part from the decline of incandescent bulbs, but also from a shift in component production to lower-cost outside suppliers. "The proposed plan would allow us to continue to reinvent our production model to use our global factory more efficiently and effectively," said Jim Campbell, president of GE Consumer & Industrial, in announcing the closings last October.<sup>6</sup>

Last year, GE announced it would start selling a high-efficiency incandescent bulb in 2010 that would be nearly twice as efficient as existing incandescent bulbs.<sup>7</sup> Ultimately, the company said, these new bulbs would be comparable in efficiency to compact fluorescents. Though major improvements have made them broadly acceptable, CFLs continue have drawbacks for some consumers; for instance, their color still isn't the same as incandescents.<sup>8</sup> Thus, an incandescent bulb with the efficiency of a compact fluorescent could attract a sizeable market.

GE has not said where it intends to make the new bulb.<sup>9</sup> However, the company could use its existing workforce – including some of those losing their jobs in the closings announced last

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<sup>4</sup> Conference Call Transcript, General Electric 4Q 2007 Earnings Call, Jan. 18, 2008, p. 19  
[http://www.ge.com/investors/events/event\\_id01182008.html](http://www.ge.com/investors/events/event_id01182008.html)

<sup>5</sup> Conference Call Transcript, General Electric Outlook Meeting, Dec. 11, 2007, p. 25  
[http://www.ge.com/investors/events/event\\_id12112007.html](http://www.ge.com/investors/events/event_id12112007.html)

<sup>6</sup> "Consumer and Industrial Announces Intention to Restructure its Lighting Business to Capture Another Century of Growth and Leadership," GE Press Release, October 4, 2007,  
<http://www.genewscenter.com/Content/Detail.asp?ReleaseID=2704&NewsAreaID=2&MenuSearchCategoryID=7>

<sup>7</sup> "GE Announces Advancement in Incandescent Technology; New High-Efficiency Lamps Targeted for Market by 2010," GE press release, February 23, 2007,  
[http://www.businesswire.com/portal/site/ge/index.jsp?ndmViewId=news\\_view&newsId=20070223005120](http://www.businesswire.com/portal/site/ge/index.jsp?ndmViewId=news_view&newsId=20070223005120)

<sup>8</sup> Deutsch, Claudia, "Seeking a More Flattering Light on, and From, Bulbs" *The New York Times*, Jan. 26, 2008, p. B2. See also "The Shape of Lights to Come? Not Everyone's Buying It," by Elizabeth Weise, *USA Today*, Feb. 28, 2008

<sup>9</sup> While Immelt left open the possibility of GE making its own investments in lighting, his recent statements about sourcing plans for the lighting business are not reassuring. He told investors twice in late 2007 that GE, using global sourcing, would be a pipeline for new lighting applications from China and Taiwan. See Conference Call Transcript, General Electric 3Q 2007 Earnings Call, Oct. 12, 2007, p. 18,  
[http://www.ge.com/investors/events/event\\_id10122007.html](http://www.ge.com/investors/events/event_id10122007.html) and the Dec. 11, 2007, call cited above, p. 25.

October – to make this product or other new, energy-efficient lighting products. It could also use these workers or its complex of manufacturing facilities for making conventional fluorescent lamps to produce CFLs.<sup>10</sup> GE makes such lamps at factories in Bucyrus and Circleville, Ohio, which are both supplied by a glass plant in Logan, Ohio.

### THE U.S. ENERGY BILL

The energy bill approved by Congress last December requires the end of incandescent bulbs, at least as we know them today, by requiring higher thresholds of efficiency than current incandescent bulbs can produce. This will generate much larger demand for compact fluorescents, since other energy-saving light bulbs – light-emitting diodes, in particular – are not available for broad, household use, and won't be immediately.

The energy bill contains a variety of measures that can support U.S. production of energy-efficient light bulbs.<sup>11</sup> It includes provisions:

- Authorizing spending of \$10 million a year for the next six years to back research, commercial development and manufacturing of energy-efficient lighting products;
- Providing training in “green jobs,” two of whose specific targets are the unemployed and workers impacted by national energy and environmental policy. The act appropriates \$125 million a year to train workers in the renewable energy and energy efficiency industries. Ex-GE and other lighting industry workers who might need to add skills to work at a CFL plant could conceivably be trained with the help of this resource; and
- Requiring the federal government to purchase energy-efficient lighting and follow Buy America provisions of existing law.

These provisions would help allow the U.S. manufacture of compact fluorescent lamps and the continued employment or reemployment of lamp industry workers to make the more efficient bulbs. They could also help allow GE to produce the high-efficiency incandescent product it announced last year, or other products such as the organic light-emitting diode (OLED) lighting devices under development.<sup>12</sup>

By mandating the national phase-out of current incandescent light bulbs as it did, Congress has helped the lighting industry, preempting possible state laws that could have required speedier action and setting a conversion timetable that was less immediate than some other nations have

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<sup>10</sup> In the industry, light bulbs are called “lamps.”

<sup>11</sup> H.R. 6: Energy Independence and Security Act of 2007, <http://www.govtrack.us/congress/billtext.xpd?bill=h110-6>

<sup>12</sup> These devices are thin films made of polymers that create light when an electrical charge is applied. GE announced March 11 that it had successfully demonstrated a manufacturing process for OLEDs that could dramatically lower their costs. The work was done as part of a collaboration between GE, Energy Conversion Devices Inc. and the U.S. Commerce Department's National Institute of Standards and Technology. “The goal of the collaboration was to demonstrate a cost-effective system for the mass production of organic electronics products such as flexible electronic paper displays, portable TV screens the size of posters, solar powered cells and high-efficiency lighting devices,” GE said. The company said its goal is to introduce OLED lighting products by 2010. See <http://www.genewscenter.com/Content/Detail.asp?ReleaseID=3263&NewsAreaID=2&MenuSearchCategoryID>

mandated. It requires the nation to switch from traditional incandescent bulbs to more energy-efficient products. At least for the immediate future, that means CFLs. Yet since very few of these products are made in this country, U.S. consumers are increasingly going to have to buy foreign-made bulbs under working conditions that may fall far short of international labor standards.

### COMPACT FLUORESCENTS AND IMPORTS IN EUROPE

It has been possible to make CFLs while providing good wages and working conditions. Osram, a unit of Siemens AG, makes CFLs at an automated plant in Augsburg, Germany. Production workers there are paid more than 25,000 Euros a year, or more than \$38,000. However, this plant has been under duress from import competition. In 2001, the European Community began levying duties of up to 66 percent on many Chinese CFLs being imported into Europe after finding that they were being dumped. At the outset of the case, the decision was supported by the European Lighting Companies Federation. That group includes the three major world-wide light-bulb manufacturers, Osram, Philips and GE, all of which manufactured CFLs in Europe.

However, by the time duties came up for review last year, GE and Philips had switched sides. They joined with importers to oppose the duties. After debate, the EC decided to extend the duties, but only for one year. Though it found that Chinese producers were still dumping CFLs in Europe and imports had skyrocketed despite the duties, it concluded that continuing the duties "...would pose a significant burden on consumers in the medium and long term."<sup>13</sup> Even prior to the decision, the plant had been losing money. Its true competitiveness, however, could only be measured if its rivals were clearly paying the real costs of production under local and international labor and environmental standards.

### MERCURY: HEALTH DANGERS AND PRECAUTIONS

The element mercury is one of the best-known toxics, with a long history both in the workplace and outside it as a source of serious harm. "Mercury exposure at high levels can harm the brain, heart, kidneys, lungs, and immune system of people of all ages," says the U.S. Environmental Protection Agency.<sup>14</sup> The term "mad as a hatter" originated because of the mercury poisoning experienced by 19<sup>th</sup> century workers in hat factories, who breathed mercury vapor during the hat-making process. Their confused speech, trembling and sometimes even hallucinations led to the term being coined.<sup>15</sup>

The EPA further describes the mercury hazards: "Acute (short-term) exposure to high levels of elemental mercury in humans results in central nervous system (CNS) effects such as tremors,

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<sup>13</sup> Official Journal of the European Union, Council Regulation (EC) No 1205/2007 of 15 October 2007, L272/15, <http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2007:272:SOM:en:HTML> Duties do not cover all Chinese producers.

<sup>14</sup> See U.S. Environmental Protection Agency, Mercury, Basic Information, <http://www.epa.gov/hg/about.htm>

<sup>15</sup> See NIH Mercury Abatement Program, Office of Research Facilities, Development and Operations, <http://orf.od.nih.gov/Environmental+Protection/Mercury+Free/> and The Mad Hatter Mercury Mystery, by Peg Van Patten, Connecticut Sea Grant, <http://www.seagrant.uconn.edu/HATTER.HTML> "The central nervous system is probably the most sensitive target organ for metallic mercury vapor exposure. Nervous system disorders following exposure to metallic mercury vapors are both consistent and pronounced." Agency for Toxic Substances and Disease Registry, HHS. Toxicological Profile for Mercury, 1999.



mood changes, and slowed sensory and motor nerve function. Chronic (long-term) exposure to elemental mercury in humans also affects the CNS, with effects such as erethism (increased excitability), irritability, excessive shyness, and tremors.”<sup>16</sup>

The amount of mercury in a CFL is comparatively small – a fraction of what is in a thermometer – but the EPA recommends opening a window and leaving the room for at least 15 minutes before beginning clean-up of a broken bulb.<sup>17</sup>

The U.S. Occupational Safety & Health Administration’s Hazard Communication standard requires training on emergency procedures and personal protective equipment. This includes training on the health effects of mercury, including its effects on the nervous system, and on precautions for safe handling and use. A material safety data sheet (MSDS) is required to be readily available in the workplace for each hazardous chemical that is used. Among the required information in these sheets are:

- “The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;”
- The OSHA permissible exposure limit, which for mercury is 0.1 milligram per cubic meter of air, averaged over an eight-hour period.
- “Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks.” This is particularly important for mercury, because spills can be difficult to clean up, and afterwards, can lead to hazardous mercury vapor.
- “Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment.”<sup>18</sup>

As described in the report from the Topstar plant, the majority of the workers interviewed told interviewers that they had no idea that the company was using mercury and other hazardous materials. While there are posters on the walls about mercury and industrial solvents, the majority of workers can’t read the posters’ contents and the posters have never been explained to them (see p. 12). This falls far short of the minimum standards in the United States, while also conflicting with the requirements in the workers’ own contracts (see Part II).

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<sup>16</sup> US EPA, Technology Transfer Network Air Toxics Web Site <http://www.epa.gov/ttn/atw/hlthef/mercury.html>  
This is the form of mercury used in lamps.

<sup>17</sup> See <http://www.epa.gov/mercury/spills/index.htm#fluorescent>

<sup>18</sup> U.S. Department of Labor, Occupational Safety & Health Administration, Regulations (Standards – 29 CFR), Hazard Communication, Section 1910.1200(g)  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10099](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099)

## II FACTORY INVESTIGATION

Xiamen Topstar Lighting Co. Ltd. (厦门通士达照明有限公司 or *Xiamen tongshida zhaoming youxian gongsi*) is a Sino-American joint venture enterprise owned in part by General Electric Co. It specializes in the manufacturing and international trading of energy-saving compact fluorescent light bulbs (CFLs), regular fluorescent lights, and other bulbs. The company is located in Haicang District, Xiamen City, Fujian Province. However, the glass bulbs themselves are manufactured by other companies in other places, such as Zhejiang Lanhua Chuangxing Glass and Electronics Ltd. (浙江兰溪创星玻璃电子有限公司 or *Zhejiang lanhua chuangxing boli dianzi youxian gongsi*) in Zhejiang Province. Topstar's CFLs are sold to the United States, Mexico, Singapore, Turkey, Australia and other countries around the world. The company has about 6,000 daily employees.

### I. Labor Contracts

The company does not directly hire workers, but like many employers goes instead through intermediaries. A number of "employment recruiters" in Xiamen City supply Topstar with its labor power. Workers pay these recruiters a fee for making recommendations for them. The fees range from 42-150 *renminbi* (RMB), a portion of which is returned to workers if the company does not hire them. For example, if the worker paid 80 RMB to a recruiter and did not get a job, she would get back 70 RMB (One U.S. dollar is worth just over 7 RMB).

Women make up 80-90 percent of Topstar's workforce. Topstar's hiring policies are deeply discriminatory: the company hires almost exclusively women, despite the fact that men would be equally competent at the work. Though its employment ads say that it hires men, too, investigators found that not a single recruiter would enter a male worker's name for a job. When the investigators asked the recruiters why this was the case, they did not get an answer. Managers said that they did not take on men and the company human resources department has regulations against hiring men. While such discrimination is not uncommon, it is a growing source of concern within China that regulators are beginning to try to address.

The company also discriminates based on age. According to workers, Topstar previously had guidelines that barred hiring anyone over the age of 30. Because it could not find enough workers under this restriction, the bar has since been moved to 32.<sup>19</sup>

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<sup>19</sup> General Electric's Fair Employment Practices Policy for its own employees disallows discrimination based on age (see *Investing in a Sustainable Future*, GE 2007 Citizenship Report, p. 55, [http://www.ge.com/company/citizenship/2007\\_citizenship/index.html](http://www.ge.com/company/citizenship/2007_citizenship/index.html)). GE also has adopted the International Labour Organization's Declaration on Fundamental Principles and Rights and Work with respect to its own employees in China, which calls for the elimination of employment discrimination. ILO Declaration on Fundamental Principles and Rights at Work, 86<sup>th</sup> Session, Geneva, June 1998, [http://www.ilo.org/dyn/declaris/DECLARATIONWEB.static\\_jump?var\\_language=EN&var\\_pagename=DECLARATIONTEXT](http://www.ilo.org/dyn/declaris/DECLARATIONWEB.static_jump?var_language=EN&var_pagename=DECLARATIONTEXT)

The hiring procedure begins with a job interview with a recruiter. Those who pass the interviews take simple tests the next day, such as being asked to write the English alphabet in capital and lower-case letters or make basic mathematical calculations.

Those that pass the tests then take a health examination at a cost of 42 RMB, paid by the workers. The exam covers height, weight, vision, skin condition, blood and blood pressure, pulse, liver condition and pregnancy. If the women pass the health examination, Topstar signs a contract with them and processes various entrance formalities, such as making four photocopies of their ID cards, taking their photographs and having them fill out various forms.

Workers undergo a one-day training before work begins, based on a manual entitled “Electronics Assembly Work Training and Reference Material.” According to workers interviewed, they never encountered anything about protecting against harmful substances in their training, but only advice on avoiding electrical shocks and on traffic safety to and from work. At the end of the training there is a test.

The company signs on average a three-year contract with each worker. However, while the contract clearly states that workers need only give three days advance notice to quit, in reality the factory will only accept resignations a week ahead of time, and then only with the approval of the manager of a worker’s production line. Otherwise, workers will not get all of the money owed them.

Many new workers who cannot tolerate the treatment or the overwork at the factory want to quit soon after being hired, but Topstar will not agree to allow them to go. The workers can then only “voluntarily take leave.” According to their contract, if they “voluntarily take leave” they must pay the factory one month’s wages as compensation. There are many workers who, for different reasons, have to take time off from work. Again, Topstar normally will not agree and the workers must forfeit a month’s wages and “voluntarily take leave.” This practice conflicts with the Labor Law, which says, “The wages payable to laborers shall not be deducted or delayed without reason.”<sup>20</sup> In addition, unless Topstar has ended this practice since last year, it would violate China’s new Labor Contract Law, which went into effect Jan. 1, 2008. The law offers workers the right to unilaterally quit work, and provides that doing so should not lead to deductions from their wages (except if a company provides training, workers must pay back the training cost).<sup>21</sup>

The company uses mercury, lead, industrial solvents and other harmful substances, but has not provided workers with “a detailed account of work dangers” as agreed upon in its contract. Though the factory uses mercury, many workers did not know what mercury was at all, its danger or how to prevent mercury accidents. Only a small minority of workers know anything about the dangers of lead, mercury and industrial solvents or how to protect themselves.

Investigators viewed many workers’ labor contracts and found that the contracts only set wages for the workers’ “trial period.” All workers’ “trial period” wages are 750 RMB, which happens

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<sup>20</sup> Labour Law of the People’s Republic of China, Article 50, <http://www.usmra.com/china/Labour%20Law.htm>

<sup>21</sup> Labor Contract Law of the People’s Republic of China, Articles 22 and 37, see [http://www.bjreview.com.cn/document/txt/2007-10/16/content\\_80896.htm](http://www.bjreview.com.cn/document/txt/2007-10/16/content_80896.htm)

to be exactly the minimum wage set by the local government. However, the contracts do not stipulate exactly how long the “trial period” lasts. Workers said that the period usually lasts two months.

Workers said that the factory does not require specialized skills and that new employees quickly become “skilled workers.” Therefore, they believe that maintaining a two-month “trial period” is simply a way of suppressing wages. Though the company is not violating minimum wage laws by paying 750 RMB per month to new employees, or about \$106, that amount is barely enough for even a modest living standard.

Topstar has a union, but it belongs to the official, government union confederation, the All China Federation of Trade Unions. When asked by investigators if the union was useful, workers said that they did not think it was any help. Many workers do not even know that the factory has a union. They also do not know who they should complain to at the factory if their rights are violated.

## *II. Work Hours & Discipline*

The factory’s workers are divided into two shifts, but different departments’ beginning and ending times are not exactly the same.

Day shift workers put in 12-hour days with an hour for an early lunch and a 15 minute break in the afternoon. Night shift workers work an eleven or eleven and a half hour night, with a 40-minute “night-time snack” and a half-hour rest period.

The day shift’s hours are:

### Light Tube Department

6:30-10:30am – Work  
10:30-11:30am – Lunch  
11:30am-3:45pm – Work  
3:45-4:00pm – Rest  
4:00-6:30pm – Work

### Assembly Department

7:30-11:00am – Work  
12:00pm-3:45pm – Work  
3:45-4:00pm – Rest  
4:00-7:30pm – Work

### Packing Department

7:30-11:30am – Work

11:30-12:30pm – Lunch  
12:30pm-3:45pm – Work  
3:45-4:00pm – Rest  
4:00-7:30pm – Work

The night shift's hours are:

Light Tube Department

6:30-11:00pm – Work  
11:00pm-11:40pm – Nighttime Snack  
11:40pm-3:30am – Work  
3:30am-4:00am – Rest  
4:00-6:00am – Work

Assembly Department

7:30-11:00pm – Work  
11:00pm-11:40pm – Nighttime Snack  
11:40pm-3:30am – Work  
3:30am-4:00am – Rest  
4:00-6:30am – Work

Workers put in upwards of 250 hours per month. However, China's Labor Law<sup>22</sup> and the Ministry of Labor and Social Security's (MOLSS) "Notice On the Question of Employees' Yearly Average Work Hour and Wage Calculation" stipulate that a normal work day is 8 hours; a normal work week is 40 hours; that the average monthly hours for a worker are 167.4 hours; and that overtime cannot exceed 36 hours in a month. Thus, overall work hours are not supposed to exceed a total of 203.4 hours for the average month.<sup>23</sup>

The MOLSS guarantees there should be two days off on average per week. However, Topstar only allows workers one day off every week. If, for some reason not related to the workers themselves, the company stops work, it arranges for workers to work on Sundays and counts the day without work as their day off. Workers interviewed said this is unreasonable and that they have the right to a regular day of rest.

Many workers said that their work time is long and tiring. In particular, besides their short meal and rest breaks, assembly line workers have almost no chance to drink water or use the restrooms. If they want to drink or go to the restrooms, the workers must first find their line

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<sup>22</sup> Labour Law of the People's Republic of China and "Notice on the Question of Calculating Employees' Average Annual Monthly Work Time and Wage," MOLSS Release 2000 (8)

<sup>23</sup> This is based on the average month, but even in a month with 23 working days, it shouldn't exceed 220 hours. All figures are based on the MOLSS notice in effect during 2007. A new standard effective Jan. 3, 2008, added another holiday per year, slightly decreasing the permitted average work days per month. See "Notice on the Question of Calculating Employees' Annual Average Monthly Work Time and Wages," MOLSS release 2008 (3)

manager to replace them temporarily. As stated, many workers quit after a few days at the factory because they cannot take the strenuousness of the work.

According to several workers, assembly line employees must continuously plug in electronic components that are as small as needles and after only a short time in the plant, the skin on their thumbs, forefingers and middle fingers has all been pricked. Their fingers form thick calluses, and often become red and swollen. When they finish their shifts, the workers ache all over and their legs have gone numb. One veteran worker said, “Ah, after more than a year [here], I am more or less numb all over and have become a machine!” Others interviewed made similar comments.

Topstar does not usually approve workers’ requests for time off. Even if something big comes up in a worker’s life and she needs to take time off it is difficult to obtain approval. If a break is approved, the factory confiscates a frightening part of the worker’s wages—even if the worker is asking for a sick leave. For example, if a worker takes any non-sick leave time off, she will be fined 20 RMB per hour she is absent; if she takes a sick leave, she will be fined 150 RMB per day, or several days’ pay.

The company further has rules dictating that if a worker does not have approval for missing work or is late, part of her wages will be confiscated. For example, if a worker is half an hour late, she will be fined one day’s wages. There are other fines, too: for example, workers are fined for working during their breaks, which workers sometimes do in order to complete enough work under the piece rate payment system. Two workers were fined 50 RMB for this offense. If workers do not manufacture according to instructions, they can be further fined 50-100 RMB, or roughly 3 to 6 percent of their regular monthly pay.

### *III. Wages*

After two months of working in the factory, workers are essentially paid a piece rate or a collective piece rate for everything. Topstar sets the production targets for each line daily and these targets *must* be met. If they are not met the same day, the workers must catch up the next day. The 10-plus hours of regular time per day that most employees work are paid entirely according to a piece rate.

The Labor Law rules that any work beyond 8 hours per day is “prolonged” labor time. Prolonged labor should be compensated at 1.5 times the wage earned during normal working hours.<sup>24</sup> Therefore, Topstar should pay workers 1.5 times its regular piece rate during overtime in order to meet the requirements of the Labor Law.

As noted, the Ministry of Labor and Social Security guarantees two days off each week. Because the workers only have one day of rest (usually Sunday), work on one other day each week should be counted as overtime. According to the Labor Law, work on a rest day must be compensated at twice the normal wage.<sup>25</sup> According to workers interviewed, this is not the case at Topstar.

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<sup>24</sup> See Labour Law of the People’s Republic of China, Articles 36 and Article 44

<sup>25</sup> Ibid, Article 44

China's regulations and those of Xiamen City, where the plant is located, require that workers be issued a detailed pay stub.<sup>26</sup> Topstar does not provide such pay stubs. Instead, the company simply announces on the tenth of every month how much was produced the previous month or how much the workers earned collectively. Without a clear sense of how their individual paychecks were calculated, the workers have a hard time analyzing whether they were paid what they were owed.

Investigators found that if you add together the company's daily living allowance (3.5 RMB per meal / day) and monthly full-attendance bonus (200 RMB), and deduct social security payments, workers usually earn about 1,300-1,600 RMB per month. That amounts to about \$184 to \$227. In hot weather, some workers get an extra payment of 100-200 RMB, depending on their job. While pay levels vary, at least a few workers earn as much as 1,800 to 2,000 RMB (\$255 to \$284).

The company does not provide dormitories, breakfast or dinner. Rent for each worker is usually around 180-260 RMB per month. After the costs of food and travel to and from work, workers really only take home a few hundred RMB.

#### *IV. Safety*

The majority of workers interviewed told interviewers that they had no idea that the company was using mercury, lead and other hazardous materials. They also did not know how to protect themselves against the dangers of these substances.

The workers did not even know that the character “汞” [*gong*, another name for mercury used in the factory] means mercury. When they were told what *gong* meant, they said that there were many plastic barrels on which “discarded objects containing *gong*” was written in red on the outside. The barrels, some of which were stored inside, were filled with CFLs and were often open or not properly sealed.

Notices and drawings, including ones relating to mercury and industrial solvents, are pasted on each workshop's walls. However, the majority of workers can't read the posters' contents and the posters have never been explained to them. As stated, investigators asked many workers about the dangers of “mercury,” “lead,” “industrial solvents,” and “toluene” and the majority of workers did not know.

Workers bring their work clothes home at the end of the day. Their workplaces have exhaust purifiers and ventilation units. Workers in some production jobs wear gloves, but others handle the bulbs bare-handed.

The company conducts physical examinations of workers, focusing on dangerous substances like mercury, lead, industrial solvents and toluene. In October 2007, the factory put 432 workers through physical examinations. As a result, 17 workers were found to have exceeded certain

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<sup>26</sup> Xiamen City Rules on Enterprises' Payment of Wages, Passed by the 12<sup>th</sup> Xiamen City People's Congress Standing Committee on Jan. 13, 2005, translated from the Chinese for this report

indicators; they were reassigned to new positions. Investigators for this study tried to find the 17 workers but were unable to track them down. It is unknown whether they received medical help.

Topstar has a doctor, who is usually on duty at the factory. The company monitors mercury levels in the factory's air, but investigators did not know if the levels met national standards or not. Investigators were unable to learn how mercury is brought into the plant or see where it is inserted into the bulbs to gain a full picture of mercury use.

Workers simply do not know the basic facts of safety in their factory. Therefore many respond to safety questions by saying that conditions are "average."

#### *V. Living / Work Environment*

The company does not provide a dormitory for workers as many companies do, so workers must rent spaces offsite. Topstar does not provide any housing subsidies. There are three cafeterias in the factory, which serve two meals: lunch and a nighttime snack. Workers are given food cards providing for 3.5 RMB per work day, an amount that is not adequate for a filling meal. Costs beyond 3.5 RMB are paid by workers, as well as costs for any beverages other than hot water. Meal and snack options include seven or eight vegetables and three to five meat dishes, as well as hot soup, noodles or dumplings.

Because day-shift workers eat lunch early, their after-lunch work hours are long, with only a fifteen-minute break. Many workers are extremely hungry by five or six o'clock, but have to wait until 7:30 p.m. to finish. Workers on the night shift, because their night-time snack is worse-tasting than the food in the daytime and the night work is harder, eat nothing or only a little bit during their entire eleven or more hour shift

Although the factory provides men's and women's restrooms in each factory floor and some floors have two of each, these facilities are not sufficient, especially when workers are on their way to work or just getting off work. At this time the restrooms are crowded, as workers are too busy otherwise to take a break. The restrooms are dirty, messy and not sanitary.

Topstar provides social security, taking a social security fee from every paycheck. However, as the factory does not provide an accounting of how it calculates its paychecks, workers do not know if the right amount has been taken. Social insurance is provided, including all the forms mandated by the government.



### III CONCLUSION

Part II of this report details how practices at the Topstar plant violate Chinese labor law. Practices there also clash with GE's own policies. The GE Code of Conduct, as described in a document the company calls *The Spirit and the Letter*, says, "Obey the applicable laws and regulations governing our business conduct worldwide." Non-controlled affiliates, it says, "should be encouraged to adopt and follow GE compliance policies."<sup>27</sup>

GE says in its 2007 Citizenship Report, "As GE operates globally, we are committed to doing so by promoting the advancement of human rights within our spheres of influence."<sup>28</sup> Further, "GE seeks to advance human rights by leading by example—through our employees, suppliers, product offerings, and through interactions with communities and governments." The company says it supports its commitment to human rights by, among other things, "monitoring adherence by key suppliers in emerging markets to environmental, health and safety standards, prohibitions against forced and child labor, and local wage and hour laws."<sup>29</sup>

Despite conducting its own audits and hundreds of training sessions for suppliers on environment, health and safety standards, GE notes that "it is possible for suppliers to game the system."<sup>30</sup> It is the company's responsibility, however, to make sure that doesn't happen—particularly at a facility where it is a co-owner.

Work practices at the Topstar plant also conflict with the Electronic Industry Code of Conduct. This is "a code of best practices adopted and implemented by some of the world's major electronics brands and their suppliers," according to the EICC web site. "The goal is to improve conditions in the electronics supply chain. Development of the Code was a multi-stakeholder effort, influenced by internationally recognized standards."<sup>31</sup> Among the members of the group as of October 2007 were Philips, a top GE rival in the lighting business, and such leading companies as Dell, IBM, Microsoft and Hewlett-Packard.

The Topstar-GE venture does not meet the EICC in a variety of ways. The work week regularly exceeds 60 hours (not just in emergency or unusual situations, as the code allows); pay stubs are not provided; overtime is not compensated at higher than regular pay; and the company discriminates on the basis of age and gender.<sup>32</sup> In contrast to the lack of knowledge and training of Topstar workers about health hazards, the code says: "Participants also recognize that

<sup>27</sup> *The Spirit and the Letter*, available at <http://www.ge.com/company/citizenship/downloads/index.html>

<sup>28</sup> *Investing in a Sustainable Future*, GE 2007 Citizenship Report, [http://www.ge.com/company/citizenship/2007\\_citizenship/index.html](http://www.ge.com/company/citizenship/2007_citizenship/index.html)

<sup>29</sup> *Ibid*, p. 54

<sup>30</sup> *Ibid*, p. 67

<sup>31</sup> See <http://www.eicc.info/>

<sup>32</sup> As noted in Part II, the age and sex discrimination in employment at Topstar also clashes with the International Labour Organization's Fundamental Principles and Rights at Work, which General Electric has adopted with respect to its employees working in China. See "General Electric response to concerns regarding industry association positions on China labour law reform," Business & Human Rights Resource Centre, 17 January 2007, <http://www.reports-and-materials.org/GE-response-China-labour-law-17-Jan-2007.doc>

ongoing worker input and education is key to identifying and solving health and safety issues in the workplace.”<sup>33</sup>

The Topstar plant violates Chinese labor law, GE’s own code of conduct and standards established by the electronics industry. This is especially concerning since consumers see the product as a boon to the environment.

Prices of CFLs have been falling as demand has increased. A four-pack of GE CFLs was recently on sale at an Ohio Wal-Mart for \$7.58, while the private-label brand could be had for \$6.97. That is a fraction of the cost just a few years ago. In California, where CFLs are subsidized by electric utilities so they can meet energy reduction targets, they can be purchased for as little as 25 cents to 50 cents.<sup>34</sup>

GE has argued that it cannot afford to produce the more energy-efficient CFLs in the United States.<sup>35</sup> However, this investigation of the Topstar plant suggests that among the reasons GE can “afford” to produce them in China is because its joint venture is not following the country’s labor law or the norms of behavior that GE describes in its own *Citizenship Report* and code of conduct. GE should live up to its own standards and ensure that its energy-efficient light bulbs are made in a way that does not compromise the health and rights of the workers who make them. It should also use its Ecoimagination to maintain a U.S. workforce to make some of these products.

While this report has focused on conditions at a plant in China, GE and other light-bulb suppliers also have an environmental responsibility to customers in the United States and elsewhere. Because they contain mercury, CFLs should not just be thrown in the household trash and taken to a landfill. Recent news reports have underscored that though the number of CFLs being purchased is growing rapidly, consumers do not have cheap, ready alternatives for proper disposal.<sup>36</sup> Some manufacturers and retailers sell boxes that consumers can use to return CFLs, but this is an expensive and inadequate substitute for a real program. Manufacturers should be required to participate in development of a lamp recycling infrastructure.<sup>37</sup> CFLs have the potential to save significant amounts of energy, and their disposal should meet high standards, too.

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<sup>33</sup> See [http://www.eicc.info/downloads/EICC\\_English.pdf](http://www.eicc.info/downloads/EICC_English.pdf)

<sup>34</sup> Smith, Rebecca, “Utilities Amp Up Push to Slash Energy Use,” *The Wall Street Journal*, Jan. 9, 2008, p. A1

<sup>35</sup> For instance, see “GE to Close Six Area Lighting Plants,” by John Booth, *Crain’s Cleveland Business*, Oct. 4, 2007 <http://www.craigslist.com/article/20071004/FREE/71004018/1090&Profile=1090>

<sup>36</sup> Munoz, Sara Schaefer, “The Dark Side of ‘Green’ Bulbs,” *The Wall Street Journal*, Jan. 24, 2008, p. D1

<sup>37</sup> See Green Purchasing Institute comments on EnergyStar residential light fixtures program, Sept. 11, 2007, [http://www.energystar.gov/ia/partners/prod\\_development/revisions/downloads/fixtures/RLF\\_4\\_1\\_Revised\\_Final\\_Draft\\_Comments\\_GPI.pdf](http://www.energystar.gov/ia/partners/prod_development/revisions/downloads/fixtures/RLF_4_1_Revised_Final_Draft_Comments_GPI.pdf), pp. 5-6, and Product Policy Institute, Background: Next Steps for Toxic Mercury Compact Fluorescent Light Bulbs: Manufacturer Responsibility for Collection, Disposal a Must, July 10, 2007, <http://www.productpolicy.org/media.html> According to the European Lamp Companies Federation, “the industry has set up a European-wide recycling infrastructure for all gas discharge lamps (including CFLs), capable of recycling mercury, as well as other metals, glass etc as part of its obligations under the WEEE (Waste Electrical and Electronic Equipment) Directive.” See “The Lamp Industry’s Commitment to Support a Government Shift to Energy Efficient Lighting Products in the Home, Questions and Answers,” European Lamp Companies Federation, April 20, 2007, p. 4, at [http://www.elcfed.org/documents/070420\\_ELC\\_Q&A\\_on\\_Domestic\\_Lighting.pdf](http://www.elcfed.org/documents/070420_ELC_Q&A_on_Domestic_Lighting.pdf)



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