OCCUPATIONAL SAFETY AND HEALTH

Health Hazards in the Semiconductor Industry

By Sanjiv Pandita

Semiconductor manufacturing is one of the most hazardous and polluting industries. Yet not many people know about it, as the smokeless manufacturing units are generally perceived to be ‘very clean and safe’. In reality, however, thousands of workers are dead, dying, or diseased because of the hazardous chemicals and radiation used in the manufacturing process. The industry itself has a nasty reputation for hiding the truth and many times even ‘crushing’ attempts to reveal the truth. The semiconductor industry is notoriously union repressive. This is evident from the fact that there is almost no visible trade union in hi-tech manufacturing all around the globe in spite of its existence for more than four decades.

In November 2003, AMRC was among a group of activists who visited the office of the Semiconductor Industry Association (SIA) in San Jose, California, the heart of ‘Silicon Valley’. The visitors, who had come from different parts of the world, were participating in a global seminar organised by Silicon Valley Toxics Coalition (SVTC), a non-profit organisation campaigning against the hazards and pollution caused by hi-tech industries. The seminar was a part of the International Campaign for Responsible Technology. In a highly charged atmosphere George M Scalise, president of the Association, as expected claimed that semiconductor manufacturing is one of the cleanest industries and that there is no medical proof to link diseases of workers to the work place or working conditions. None of us bought his argument especially Helen Clark who had worked for National Semiconductor in Greenock, Scotland (UK) and miraculously survived stomach cancer, which she contracted at work, though many of her colleagues and friends were not so lucky and died of various cancers. Helen confronted the president of the association and cited numerous cases where workers were affected at work in the National Semiconductor plant. Scalise, even though perturbed by Helen’s presence, continued to evade the issue by stressing the amount of money they spend on the health and welfare of the workers but no one was convinced as it was evident the industry is just evading its responsibility and is ready to go to any extent to protect its hollow reputation at the expense of the workers’ lives all around the globe.

Industry has been vehemently opposing epidemiological studies to link the high rate of cancers and other disorders among the workers with their work environment. Ironically in the US, SIA conducted a feasibility study that would determine whether there was a need for such epidemiological study.

Clean rooms - clean for who?

Semiconductor manufacturers always portray the industry as clean, stack-less, and free of pollution. Workers wearing head to toe ‘bunny suits’ work in sterile ‘clean rooms’ where air is filtered to remove minute particles. Industry claims that these rooms are cleaner than operating theatres. However, the whole idea of making the room sterile and dressing workers in bunny suits is not to protect the workers from the hundreds of hazardous gases used in the ‘clean room’ but to prevent the chip from sweat or dust particles from the worker. Workers have to breathe the hazardous gases as they remain inside the room. Chips however are protected from impurities that can hamper semiconductivity.

National Semiconductor, Scotland

National Semiconductor started operations in Greenock, Scotland, in the early 1970s, employing about 1,500 workers, mostly women. The women perceived it as a great opportunity to attain financial independence. They had no idea what working at this plant could do to their health. Headaches, nausea, bleeding nose, and respiratory problems were common. However, in the following years more serious health problems emerged among the workers, including miscarriages, birth defects, cancers of the breast, uterus, and stomach, asthma, vision impairment, and many more.

Women were often exposed to hazardous chemicals and solvents, some of which were even ‘known reproductive hazards’. Glycol ether, a solvent known to pose reproductive risks, was used till 1993 even though the semiconductor association had warned about its usage as early as 1982.

Helen recounted to AMRC some of her experiences while working in the ‘clean room’ of the National Semiconductor plant. She said, “Prior to working for National Semiconductor I worked as a nurse. During my interview with the company I was asked if I was affiliated to any trade union and was strongly urged not to contact any previous union. My job training was only for 10 minutes, and it did not include anything about safety procedures or hazards from chemicals. We were ignorant about all the hazards and what they could do to us. Headaches and nose bleeding among the workers...
was quite common. Safety procedures were always flouted. The arsine gas (used in production and is hazardous) monitor was never taken seriously especially when the workload was high and managers often told us to ignore the danger warning claiming it to be just a malfunction of the monitor and to continue to work. If we spilled acid on our hands, the supervisors would warn us to be careful and asked us to carry on working. I worked for six years, from 1979 to 1985 and one day I just collapsed on the floor. The company doctor told me that I should consider retiring, but I was only 36. Further diagnostic tests showed that I had developed stomach cancer and the doctor told me that my stomach had the look of an 80-year-old woman’s. Now more than half of my stomach has been removed. I am lucky to be alive. Many workers died of different cancers. I tried to fight back and demand compensation from the company. I commissioned a report and even hired a lawyer. Managers would openly say that it is very difficult to fight with multinationals. I don’t want their money I want them to apologise for what they did to me and other workers”.

Phase II

Injured and diseased workers did not receive any compensation from the company. The company was not even willing to acknowledge that these illnesses had any link with the manufacturing process. This encouraged these sick women to organise and they formed an organisation called Phase II (People for Health and Safety in Electronics). Jim McCourt, a GMB trade unionist, and also a founder member of Phase II was instrumental in organising the women and raising their awareness by supplying information about the chemicals they used to work with. They also received support from SVTC and other US groups to launch a campaign against National Semiconductor. As a result of the campaign, in 1997 local, national, and international media started to report the problems in the plant and workers’ sufferings. Alarmed by the media attention of Phase II the company resorted to “dirty tricks” to undermine the campaign. An internal document of the company dated 19 January 1998 details the strategy and plans to undermine the campaign and to preserve the ‘reputation of the company’. The document revealed that a local public relations company, Beattie Media, was retained as a part of the company’s communication team. The strategy also included using a female member of Beattie Media’s staff to pose as a clean room worker for BBC investigative journalists. Around the same time Jim’s office was burgled and he was intimidated in the street at the end of a Phase II support group meeting. However, Phase II continued its campaign unaffected by the company’s underhand tricks, which in fact made their resolution stronger.

The Health and Safety Executive (HSE), the UK’s occupational safety and health regulatory body, conducted a study in 1998 to study the increased rate of miscarriages among workers in National Semiconductor’s plant and surprisingly its report concluded that there were no excess miscarriage risks. Many experts around the world challenged this report and the methodology was questioned even in the ‘International Journal of Occupational and Environmental Health’. The HSE also conducted a study on the increased rate of cancer among the workers in the plant and the findings released in November 2002 documented increased rates of cancer among semiconductor workers at National Semiconductor’s plant.

This was a major victory not only for the workers at National Semiconductor but also for the workers globally in hazardous chip manufacturing. Governments have started recognising the problem that was being utterly ignored under pressure from the chip manufacturers. Scotland is the only place where such an epidemiological study has been conducted and even though there is a long way to go to bring companies to justice, yet it is a major step forward.

Semiconductor and other electronic hi-tech industries are mushrooming in Asia and more companies from the west are shifting operations to Asia. There is very little known about what happens to workers’ health due to the secretive and anti-union attitude of the industry. However, some effects on workers’ and community health are emerging. For example there have been cases of mysterious deaths and disease in the Electronic Industrial Zone, Lamphun, Thailand, and hazardous chemicals from a RCA (US multinational - see following profile on Taiwan) plant in Taiwan have caused cancers and other illnesses among workers and neighbouring communities, who are struggling against these corporations. The struggles in Scotland and Silicon Valley are an inspiration to us all to demand better safety and health conditions across Asia.

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