

Environmental liability and the construction industry in Asia

Building and construction activities have the potential for significant water, soil or air pollution by a range of contaminants. The risk of these pollution exposures in the construction industry can be influenced by the surrounding environmental receptors; the subsurface contamination conditions; the exposure pathways; the chemicals and pollutants involved; and the mechanism of pollutant transport.

An environmental impact assessment (EIA) study attempts to identify and quantify environmental exposures using onsite monitoring, the published literature and calculations to determine the risk of harm; however, the scope of the EIA may be limited by time, information and cost factors.

Establishing accurate baseline (pre-project) conditions is crucial

Establishing accurate baseline (pre-project) conditions is crucial in determining whether there is a risk of harm from a certain project. Baseline conditions are accurately determined in the majority of cases; however, time and cost constraints may impact, for example, access to detailed groundwater information; the adequate review of the controls employed to accurately determine the discharge and recharge potential during construction; or the sampling of both the soil and ground water at sufficient depths to include all potential contaminants within the area.

Concealed risks in construction

Although it is easy to imagine the sudden, often dramatic pollution events that attract media attention, pollution exposures of a more gradual, even concealed, nature should not be overlooked.

One concealed risk is the problem of chemicals spilled or pollutants generated by construction works entering runoff water or soaking into the ground where they may pollute groundwater, wells and even drinking water. Typical examples, and of increasing concern, are volatile organic compounds (VOCs), which are contained in a wide variety of commercial, residential and industrial products, such as fuel oils, solvents, cleaners and degreasers, paints, inks, dyes, refrigerants and pesticides. Newly completed buildings may release VOCs that can pose a health hazard to occupants. Carpets, finishes and floorings can also be sources of VOCs. When VOCs are spilled, a portion will evaporate, but some may soak into the ground. VOCs that become trapped within a peat or subterranean rock formation may pose a human health hazard when they vaporise over a period of time, affecting air quality. This manifests on the surface only if there is a channel (such as a crack in the rock) allowing a route for the vapour to escape.

Environmental impact assessment requirements in Asia

Construction projects in Hong Kong generally require environmental permits or licences before commencement of works. The Environmental Impact Assessment Ordinance (Cap 499) determines the requirement for an EIA study to be carried out on 'designated' construction projects that may have an adverse impact on the environment, including certain roads, railways, depots, airports, port facilities, reclamation, marine works, water/sewage works, utilities, waste handlings, and other industrial projects.ⁱ

The Environmental Impact Assessment Act of Taiwan and its enforcement rules impose EIA requirements on agricultural, educational, energy, mining, infrastructure and other municipal developments. Projects with the potential to have significant environmental impact require a more extensive EIA and review process.ⁱⁱ

China's Environmental Protection Law and Environmental Impact Assessment Law require EIAs on all individual construction projects with potential environmental significance, as well as on government plans for land use and regional developments in relation to industry, agriculture, livestock breeding, forestry, energy, water conservancy, transportation, urban construction, tourism and natural resources.ⁱⁱⁱ

In Singapore, development proposals are assessed by relevant agencies (among them the National Environmental Agency and the national water agency, PUB) to determine their potential impact on the environment. Some proposals require further studies; specifically, EIAs are required for major developments near environmentally sensitive areas, such as nature reserves.^{iv}

To correctly identify the vapour intrusion potential of a VOC, an environmental consultant requires not only specialist knowledge of the specific chemical of concern, but also needs information about the structure of buildings, the transport pathways and the site geography. Such information is not always readily available.

Another example of a concealed risk relates to historical contamination. A site user or owner is well advised to enquire about the historical use of the site, since he or she may be exposed to environmental risk when they inadvertently disturb contaminants that predate their site use or ownership.

Construction works may cause a pollution situation that has the potential to create a significant financial burden

It is important to bear in mind that although a pollution condition may not initially exist onsite, construction works may cause a pollution situation that has the potential to create a significant financial burden. Examples of this are when hydrocarbons present in fill material are inadvertently brought onto a site, requiring cleanup; improper handling of construction waste causing discharge to the environment; or when pollutants are spilled by plants or equipment required for construction works. The result may be contamination to either the site or external receptors, such as natural resources in close proximity to the site boundary, or both.

What are the main contaminants?

The main types of contaminants that present potential environmental liabilities for construction projects are:

- ▶ Chemicals used in construction process (e.g. bentonite and sealants)
- ▶ Metals (e.g. lead, mercury and arsenic)
- ▶ Inorganic compounds (e.g. sulfuric acid)
- ▶ Oils and tars
- ▶ Pesticides
- ▶ Other organic compounds (e.g. benzene, toluene, ethyl benzene and xylenes, polychlorinated biphenyls, trichloroethylene [TCE] and perchloroethylene [PCE])
- ▶ Toxic, explosive and asphyxiant gases (e.g. methane)
- ▶ Flammable and combustible substances (e.g. petrol and diesel)
- ▶ Fibres (e.g. asbestos and synthetic mineral fibres)
- ▶ Putrescible or infectious materials (e.g. medical waste)
- ▶ Other harmful waste (e.g. unexploded ordnance and syringes)



What are the exposure pathways?

Pathways for pollution exposure may include:

- ▶ Vapour intrusion (e.g. of TCE, PCE and hydrocarbons)
- ▶ Storm water and sediment run-off causing erosion or contamination
- ▶ Noise and vibration from heavy machinery
- ▶ Contaminated soil, either existing or brought on to the site, or both
- ▶ Plume disturbance (e.g. from pile driving)
- ▶ Groundwater disturbance from borehole drilling
- ▶ Release of hydrocarbons, lead, silica dust and road dust from plant and machinery during construction
- ▶ Release of toxins from the use of substandard or non-compliant construction materials
- ▶ Vandalism
- ▶ Interference with the site's natural resources (i.e. flora, fauna, aquaculture, wildlife and ecosystems), which, by definition, are part of the property
- ▶ Disturbance of unknown pre-existing, often historical contamination
- ▶ Disturbance from natural disasters (e.g. floods, earthquakes, storms and windstorms)

What are some examples?

- ▶ A Taiwanese-owned steel complex in Ha Tinh, Vietnam, was found responsible for a chemical spill that resulted in massive fish deaths along 200km of coastline and affected four provinces. The spill was reportedly caused by sub-contractors' mistakes during their test operations. The incident sparked protests in Vietnam and was investigated by the government. The company agreed to pay US\$500 million in compensation to the fishermen and to clean up the environment. (2016)^v
- ▶ Water in public housing estates in Hong Kong was found tainted by lead in excess of the World Health Organisation drinking water standards. A total of 29,000 households were affected by the tainted water. Although it is alleged that the pipes were manufactured to detailed specifications, which excluded the use of lead materials, lead was found in the solder materials of the pipes. A costly investigation and remediation process was initiated to rectify the issue. (2015)^{vi}
- ▶ Following a landslide caused by the collapse of a huge mound of construction debris in Shenzhen, China, 33 buildings were buried and at least 74 people were reported missing or dead. In total, 14 factories, 13 low-rise buildings and 3 dormitories were flattened in the disaster which left a blanket of mud up to 10 metres thick in places. 11 people were charged with negligently causing a serious accident. (2015)^{vii}
- ▶ A construction firm in Singapore was prosecuted and fined for illegally discharging a bonding agent used in construction works into a public roadside drain, instead of storing it in containers for disposal by a licenced industrial waste collector. National Environment Agency and Public Utilities Board contractors spent 15 hours cleaning up the Whampoa River and the Jalan Ampas drain. (2015)^{viii}
- ▶ VOCs in newly completed dormitory buildings of a university in Hong Kong were found to have exceeded normal levels, causing a delay in the opening of the dormitory. The university suffered a loss from paying for alternative accommodation for the students. (2012)^{ix}
- ▶ In an ongoing debate, environmentalists and parents of children at a school in Jiangsu province, China, remain unconvinced by 'normal' air quality and water test results, after nearly 500 pupils have fallen ill with a range of ailments including thyroid nodules, lymphadenopathy and blood abnormalities. The school was built on or near a site where the soil and groundwater were contaminated by three chemical plants. Preliminary investigation indicates that the pollutants had not been cleared before construction began, and it is alleged that the contaminated ground was covered with clay following parents' complaints, which may mask or delay the release of pollutants but will not eradicate the problem. (2016)^x

What can we conclude?

Experience has shown that the complexities of identifying the cause or the extent of contamination at a construction site may mean significant environmental liability exposures for the construction industry. Despite the common misconception that only environmental contractors need to obtain environmental coverage (when the Principal to the subcontractors can indeed be implicated), and given ever-stricter environmental legislation and regulatory enforcement and increased media and community awareness, it is important to have adequate financial protection in place to minimise the financial and reputational implications to your business in the event of a pollution incident.

Environmental insurance - issues to consider

- ▶ A fine may be issued when the environmental regulators are involved, even if no property damage, personal injury or cleanup requirement is established.
- ▶ Emergency response and recovery are key elements in environmental incident loss mitigation, and warrant specific insurance coverage. Appropriate protection will afford protection for the insured's own costs incurred for response and mitigation expense.
- ▶ A General Liability policy may not be triggered by a regulatory body-enforced cleanup notice, whereas a specific Environmental Liability policy will offer protection.
- ▶ Increasingly, directors and officers and employees – not merely the business – are being held liable for environmental incidents, which means that having Personal Liability coverage is becoming a must.
- ▶ The cleanup costs cover offered by a good Environmental Liability policy should include the insured's expenses in their ongoing engagement of consultants and environmental experts engaged in site rehabilitation.
- ▶ Appropriate Environmental Liability insurance cover is important not only to cover the potentially significant costs that may be incurred, but also to limit the potential damage to your business reputation and brand, which can suffer irreparable damage following a poorly managed environmental incident.

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- i Environmental Protection Department 2016, A Guide to EIA Ordinance, <<http://www.epd.gov.hk/eia/english/guid/ordinance/guide1-3.html>>
- ii Environmental Impact Assessment Act 2003, Laws & Regulations Database of the Republic of China, <<http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=00090001>> and Environmental Impact Assessment Enforcement Rules 2015, Laws & Regulations Database of the Republic of China <<http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=00090002>>
- iii Environmental Impact Assessment Law of the People's Republic of China, 2003, <http://api.commissiomer.nl/docs/os/sea/legislation/china_s_ea_legislation_03.pdf>
- iv 'Demand for environment impact studies grows', Asia One, May 2014, <<http://news.asiaone.com/news/singapore/demand-environment-impact-studies-grows>>
- v Minh T, June 2016, 'Vietnam finds Taiwanese company responsible for fish deaths', Arizona Daily Sun, <<https://apnews.com/648f98fe794941598351d62da1503bf5>> and Tre B, June 2016, 'Formosa admits link to Vietnam's fish deaths in memo', Baomoi, <<https://www.abc.net.au/news/2016-07-01/mass-fish-kill-in-vietnam-solved-as-steelmaker-admits-pollution/7559906>>
- vi Cannix Y, June 2016, 'Democratic Party lawmaker Helena Wong, who exposed the scandal last July, will team up with veteran barrister Martin Lee in her legal fight', South China Morning Post, <<https://www.scmp.com/news/hong-kong/health-environment/article/1966307/hong-kong-tainted-water-whistle-blower-spearhead>>
- vii 'Nearly 100 missing after landslide buries buildings in Shenzhen, China', Sydney Morning Herald, December 2015, <<http://www.smh.com.au/world/landslide-buries-buildings-in-shenzhen-china-20151220-gls4gj.html>> and 'Shenzhen landslide disaster: 11 arrests for negligence', BBC, January 2016, <<http://www.bbc.com/news/world-asia-china-35208881>>
- viii 'Construction firm fined another S\$3,000 for polluting canal', Today, December 2015, <<http://www.todayonline.com/singapore/construction-firm-fined-s3000-polluting-public-canal>>
- ix Jin F, September 2012, 'The new hostel formaldehyde nearly HKU students fear', Wenhui, <<http://paper.wenweipo.com/2012/09/06/ED1209060006.htm>>
- x Wong C, April 2016, 'China pollution scandal: air, water in school near toxic site normal, say officials', South China Morning Post, <<http://www.scmp.com/news/china/policies-politics/article/1938925/china-pollution-scandal-air-water-school-near-toxic>>

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