

ZERO WASTE ENGINEERING

CONTENT

- 01 CORPORATE POSITION
- 02 ABOUT CHEMILINK
- 04 OUR PRODUCTS
- 06 OUR SERVICES
- 08 OUR PROJECTS
- 10 PROJECT SHOWCASE
 - 10 Airports
 - 12 Seaports
 - 13 Highways and Urban Roads
 - 14 Roads
 - 15 Buildings
- 16 RESEARCH & DEVELOPMENT
- 18 RESEARCH FACILITIES
- 20 OUR NETWORK

CORPORATE POSITION

Your Partner for Green and Effective Engineering Solutions & Materials

PHILOSOPHY

Towards a zero solid waste society.

VISION

The leading standard in Zero Waste Engineering.

MISSION

To construct environmentally friendly and sustainable infrastructure by investing in zero waste businesses, creating zero waste processes, employing and developing people with zero waste mindsets.

VALUE PROPOSITION

Fast construction of cost effective, eco-friendly and durable infrastructure through very innovative and sustainable engineering solutions.

CORPORATE VALUES

Innovation & Passion, Process & Quality Driven, Integrity & Honesty.



ABOUT CHEMILINK

Chemilink Technologies Group is a subsidiary of Chemilink International Holdings, incorporated in Singapore in 1993. We are a supplier and specialist of engineering solutions and products/materials. We are also active in the research and development, manufacturing and supply of technologically advanced construction materials, and systematic green solutions. Our products, technologies, and application methodologies are trademarked under the “Chemilink” Series.

TOTAL SOLUTIONS

With a comprehensive range of materials and services that cover major areas of construction, Chemilink functions as the Specialist offering our “Total Solution” for our clients’ construction needs. These include higher technical contents, superior quality and long-term performances, simple and quick installation, practical modification as well as prompt and effective technical response.

ZERO-WASTE ENGINEERING

Chemilink aims to become a leader in Zero Waste Engineering incorporating technology, construction material and application methodology internationally, through continuous research and development. We constantly improve our methods to provide cost-effective and green products, with superior quality and innovative application technologies, to cater for different needs of the infrastructure and building construction industry.

“Mother Earth was my inspiration. People have been harming her by digging, quarrying, burning, and polluting. I just wanted to minimise this harm.”

- Dr Wu Dong Qing, Founder & Managing Director/CEO of Chemilink

CORPORATE SOCIAL RESPONSIBILITY

At the heart of our business, is our passion to be Green. As we build our roads and cities, we believe in zero waste engineering, and minimizing the harm done to the natural environment. Chemilink Technologies and Products not only reduce the demand for natural resources – for which extraction is frequently harmful to the Earth, it also turns construction wastes, that are commonly dumped illegally and causing environmental problems, into reusable construction materials.

We also provide “Chemilink Technology Transfer Services” to the local community through technical training, construction supervision, project management, quality assurance and quality control.



OUR PRODUCTS

We provide green and effective engineering solutions comprising the supply of engineering compound and provision of technical services. Chemilink products can be classified into three main series: SS-100 Series for Civil / Road Construction, SS-200 Series for Building Construction, and SS-300 Series for Solid Waste Management.

1. SS-100 Series for Civil/Road Construction

The Chemilink SS-100 Series have been developed based on the latest scientific knowledge and methods with key raw materials; recycled materials and additives.

- SS-108 series for Soil Stabilization/ Rehabilitation/Recycling
- SS-110 series for Stone Stabilization/ Rehabilitation & Recycling of Construction Wastes
- SS-120 series for Road Surface Quick Repairing
- SS-130 series for Road Surfacing/Resurfacing
- SS-140 series for Semi-Rigid Pavement

2. SS-200 Series for Building Construction

Chemilink SS-200 series are wide range of high-quality and customized building construction materials. These ranges of systematic solutions constantly meet customers' needs and improve the quality, safety, efficiency, cost effectiveness, design and durability of building construction.

- SS-210 series for Wall Finishing
- SS-220 series for Floor/ Car-park Surfacing
- SS-230 series for Concrete/Mortar's Repair/ Bonding and Water-Plug
- SS-240 series for Grouting
- SS-250 series for Waterproofing (floor, roof,...)
- SS-260 series for Tile-Adhesive

3. SS-300 Series for Solid Waste Management

The Chemilink SS-300 Series are mixtures of bio-chemical and chemical additives, formulated for solid waste transformation and management.

- SS-310 series for Slurry/Sludge Treatment
- SS-320 series for IBA/IFA Treatment
- SS-330 series for Land Reclamation
- SS-340 series for Landfill Liner & Capping
- SS-350 series for Coal Binding



OUR SERVICES

We specialize in the design, supply, and construction of airfields, seaports, roads, and other civil engineering projects. Our services include quick and effective treatment of shallow base foundations especially in swampy and soft ground areas, reclaimed lands, in-situ soil/ stone stabilization and rehabilitation as well as recycling of solid waste materials.

Essences of Innovative Solutions

Premier, Unique & Innovative Solutions to Address Civil Engineering's Challenges

- **“Floating” Semi-Rigid Platform** over swampy and soft ground. (15-year highways/roads in swampy areas without major repairing)
- **Excellent Workability** for quick build and repair airport infrastructures under heavy operational limitations. (Iconic project: Singapore Changi International Airport runways widening, featured by Discovery Channel in “Man Made Marvels” program and broadcasted since 2008)

- **Anti-Cracking Performance** for high-grade flexible pavements. (Examples: airport runways and taxiways with stabilized base & sub-base courses)
- **Semi-Rigid Pavement** with highest performances for heavy loadings (Examples: airport parking aprons, heavy traffic roads and junctions in Singapore)
- **Reduce, Reuse & Recycle (3R)** local soils and solid construction wastes for various sustainable pavement construction (Almost all Chemilink pavement projects internationally)

Customer Services

- Green and effective materials & products
- Sustainable R&D / Project R&D with Customization and Localization.
- Consultancy services including Pavement Design, Material Design and Construction Design.
- Project Management (for SS-100 series)
 - Construction Management
 - Quality Control
 - Site Supervision

OUR PROJECTS



Forging alliances with our business associates, Chemilink undertakes various regional infrastructure and building projects. Chemilink Series Solutions have widely been used for public and private projects in Asia, mainly in South-East Asia countries and some of the range in the series have been specified and endorsed in these countries' Public Works Specification.

Major Chemilink Projects

Airfields

- Singapore Changi International Airport Runway Widening (2005)
- Malaysia Senai International Airport Runway & Taxiway Widening (2007 & 2008)
- Singapore Changi International Airport Parking Apron (2007)

Seaports

- Indonesia Batam Shipyard (1997)
- Malaysia Port Klang Container Yard (2010)

Highways/Roads

- Jalan Tutong Widening Phases II & III, Brunei (1997 & 1999)
- Brunei City Road Maintenance (2000)
- China Low Cost Roads (e.g. Tibet Public Roads, 2002~2011)

- Caltex Oil Field Access, Indonesia (2002)
- South-East Asia Public Roads in Swampy Areas (2004)
- Sri Palani Murugan Industrial Growth Centre, India (2010)
- Heavy Traffic Junctions, Singapore (2010~2011)

Buildings

- Jiangyan Secondary School in Jiangsu, China (1999)
- Nanzhen Building in Shanghai, China (2000)
- Upgrading of Swimming Pool for Westin Stamford Hotel, Singapore (2000)
- NTU Hostel Redevelopment, Singapore (2001)
- Airport & Aviation Services in Colombo, Sri Lanka (2004)
- National Hospital in Colombo, Sri Lanka (2004)
- Kuala Belait Hospital in Brunei (2004)
- Reconstruct of Maktab Sain College, Jalan Muara Phase II, Brunei (2004)

- Waterproofing for Superior Court in Colombo, Sri Lanka, (2006)
- The Sail at Marina Bay, Singapore (2007)
- Singapore HDB Aprons (2007~2011)
- Multi-Storey Car Park at Chin Swee Road, Singapore (2011)

R&D for Solid Waste Management

- ETRP - Environment Technology Research Programme with NTU (2009)
- IES – Innovation for Environmental Sustainability (2010)

PROJECT SHOWCASE

AIRPORTS

Chemilink projects for the past 20 years are a testament to our superior engineering solutions



SINGAPORE CHANGI INTERNATIONAL AIRPORT RUNWAY WIDENING (2005)

This runway-widening project is a showcase of how Chemilink stabilization can achieve cost and time savings and also greatly minimize disruptions on heaviest airport operations in a green approach. Widening of both runways was completed in 60 working days while the schedule was 6 months which enabled Changi Airport became one of first airports which met operational requirements for Airbus A380 and therefore featured in Discovery Channel - "Man Made Marvels" programme. The performances have been confirmed to be satisfactory without defects since 2005.



SINGAPORE CHANGI INTERNATIONAL AIRPORT PARKING APRON (2007)

In 2007, Chemilink Semi-Rigid Pavement System was adopted in the parking apron maintenance project in Singapore Changi International Airport. By combining Chemilink SS-141 topping mortar with porous asphalt concrete, Chemilink Semi-Rigid Pavement System is formed. The Semi-Rigid Pavement is an innovative model which falls in between flexible pavement (asphalt concrete) and rigid pavement (cement concrete), and provides flexibility, high strengths and chemical resistances. Thus, it only takes hours for maintenance unlike normal concrete repairing which will take months.

MALAYSIA SENAI INTERNATIONAL AIRPORT RUNWAY & TAXIWAY WIDENING (2007 & 2008)

After completion of runway widening (Half-Strength Pavement), Chemilink Soil Stabilization Technologies was further incorporated in taxiway (Full-Strength Pavement) in Malaysia Senai International Airport. Due to limited airport closure time (12am-6am), speed and efficiency were the main concerns from the airport authority, in order to maximize daily production rate and reduce whole construction period. By replacing graded granite aggregate with Chemilink stabilized in-situ soil, daily construction was about three times faster. The serious technical challenges such as higher clay content with liquid limit of 80% or more, and much higher in-situ water content - which was generally 2 times of OMC (Optimum Moisture Content) – were creatively resolved. Both the runway and taxiway widening projects have been performing well since the completion dates in 2007 and 2008 respectively.



SINGAPORE CHANGI INTERNATIONAL AIRPORT TAXIWAY STRENGTHENING (2011)

For heavy loading surfaces such as taxiway junctions, the typical thickness design is a single layer of 50mm to 75mm thickness. For cases with higher technical requirements, the thickness design is doubled to two layers. For the Changi Taxiways, the doubled thickness design was required to increase the performances and durability. Few systems can meet the high requirements of this project but Chemilink's Semi-Rigid Pavement System was able to. Chemilink's grouting material has a wide range of flowing time and can easily penetrate into 75mm deep or more to form a thicker layer of semi-rigid pavement in addition to the typical practice with 50mm thick. This Chemilink system has provided higher workability, better technical performances and longer durability with lower maintenance cost.



SEAPORTS



INDONESIA BATAMAS SHIPYARD (1997)

The Batamas Shipyard Project in Indonesia required the stabilization of the existing ground up to 300mm deep, in order to form higher quality sub-base platform to support the upper layer of reinforced concrete slabs. Previously, various conventional chemical stabilizing agents were tested to stabilize the in-situ wet sandy and silty soils but all were unsuccessful. However, by using Chemilink Soil Stabilization, the average CBR of 75% was achieved to satisfactorily meet the design criteria of CBR value not less than 60%.

HIGHWAYS & URBAN ROADS

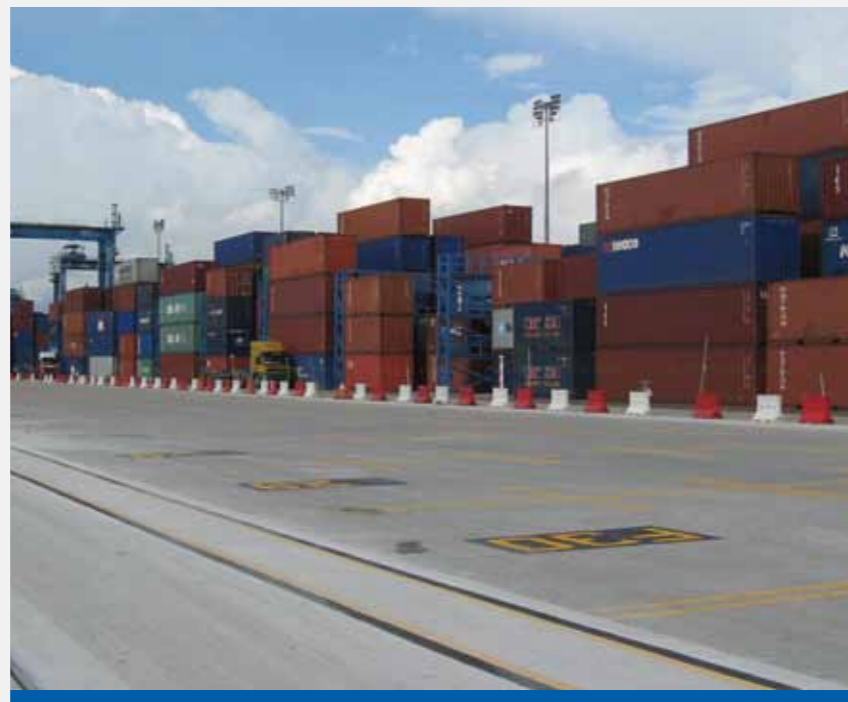


JALAN TUTONG WIDENING PHASES II & III (1997 & 1999), BRUNEI

Jalan Tutong is a city central expressway with heavy traffic, located in swampy area with high water table, average peaty ground of 30-50m depth. With the successful track records in weak foundation/swampy areas in Brunei and South East Asia, Chemilink Stabilization solution was adopted in Phase II of Jalan Tutong Widening project. With satisfactory performances in Phase II, Chemilink Stabilization was further incorporated in pavement design for Phase III of the project, which directly contributed to reduce 70% of pilling as in the original design. After which, Chemilink Stabilization Technologies were specified in General Specification of Road Works by Brunei Public Work Department. The performances for these projects are very satisfactory without major maintenance works after more than a decade.

MALAYSIA PORT KLANG CONTAINER YARD

Due to very soft ground conditions and ultra high loading, facilities in Malaysia Port Klang - Northport experienced serious differential settlement issue. Maintenance and upgrading of the container stacking yard in Northport was conducted in 2010 to mainly rectify differential settlement issue. The in-situ mixtures of crushed aggregates and soils from existing pavement were rehabilitated with Chemilink stabilization system to form a semi-rigid platform as the sub-base of the yard so as to improve the loading bearing capacities and eliminate differential settlements.



HEAVY TRAFFIC JUNCTIONS, SINGAPORE

Concrete pavement with good wear/tear and chemical resistances has great difficulties in maintenance and repairing, while asphalt concrete can easily be repaired but is not durable if under heavy loading and chemical impact. The semi-rigid pavement system has thus been developed by combining the advantages of the both pavements to perform like concrete but to be easily maintained like asphalt concrete. This system is formed by pouring Chemilink polymer modified grouting material into the porous asphalt concrete. With this system, the traffic is permitted within a few hours for maintenance/repairing and it provides good durability with low maintenance cost. The properties of Chemilink grouting products and the proven performances of the resulted semi-rigid pavement are in the leading position in the market.



ROADS

Apart from the above-mentioned high profile infrastructure projects, Chemilink Stabilization Technologies have also been applied, for the past 20 years, in diverging applications throughout South East Asia and other regions such as China and India, from low cost rural and plantation roads to heavy loading mining accesses. Every one of these projects shows the construction efficiency, cost effectiveness, and tailor-made delivery fulfilling clients' requirement. Durability of these roads was tested and excelled through various hot-cold cycle (such as in Tibet and Inner Mongolia of China) and dry-wet monsoon season (in tropical region).



CHINA LOW COST ROADS (TIBET)



LOGGING ACCESS



SOUTH-EAST ASIA PUBLIC ROADS IN SWAMPY AREAS



RURAL ROADS

BUILDINGS

Singapore Westin Stamford Hotel upgraded its swimming pool by using Chemilink waterproofing products for both horizontal and vertical structures. Chemilink waterproofing system has provided excellent functions like strong waterproofing against dampness and hydrostatic pressure. For floor surfacing projects, The Sail is one of the most iconic residential towers in Singapore and Chemilink Self-Levelling System was used for its whole floors to provide a firm and smooth finishing as the floor surface.



THE SAIL @ MARINA BAY FLOORING SYSTEM

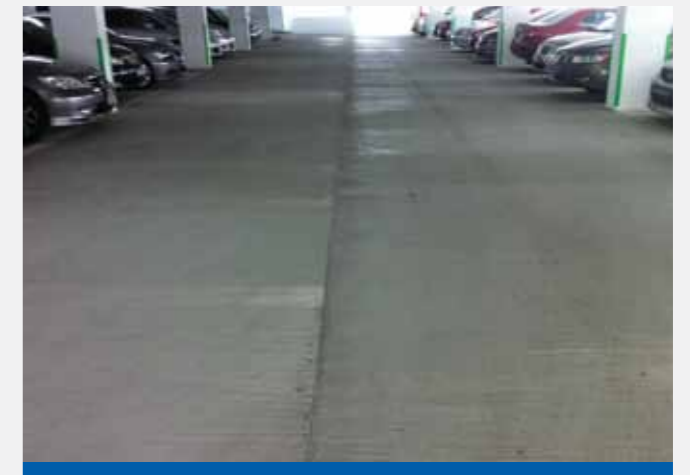


WESTIN STAMFORD HOTEL POOL WATERPROOFING

Throughout the years, the Singapore Housing Development Board (HDB) has been using Chemilink Acrylic Polymer Cementitious Coating (APCC) for their common walkways and aprons. Another Chemilink system called High Performance Acrylic Polymer Coating has also been used in public in-house car parks such as that in Chin Swee Road. Both products have provided excellent performances in good skid resistance, fast setting, durability and cost effectiveness. Chemilink products have also achieved in good workability and adhesion to the given concrete substrate in both upgrading and new projects.



HDB APRONS & WALKWAYS



CHIN SWEE ROAD MULTI-STOREY CARPARK



RESEARCH & DEVELOPMENT

Chemilink's uniqueness and leading position in the market lies in our commitment to research and development.

GOVERNMENT-GRANTED PROJECTS

We engage in Singapore government-granted R&D projects in the field of zero waste engineering, incorporated with various academic specialties, such as civil engineering, eco- and environmental engineering, material science and engineering, chemical engineering and chemistry, and biological engineering. Chemilink collaborates with universities, government agents and research institutes for these projects.

EXTENDING OUR REACH

Our continuous R&D works and applications have also been extended to the international market.



Landfilling is expected to be the most commonly employed waste disposal method worldwide since it is seemingly simple and economical. Poorly designed and operated landfills can, however, compromise human health and environmental quality with uncontrolled emissions of gas and leachate.

The target of the project is to develop a method for accelerated landfill stabilization, and to transform the landfill into a source of energy and a site for carbon sequestration. The developed method may be test-bedded at one of Singapore's landfill sites.



This project proposes to transform IBA into a safe and useful resource for land scarce cities like Singapore. - Using this transformed resource for land reclamation application is a more sustainable approach towards residues disposal. This project intends to develop coherent chemical and physical treatment solutions to safely recycle IBA and to reutilize it together with marine clay for land reclamation. The solutions will resolve leaching issues – associated with IBA and will potentially reduce the long-term need and dependence for imported sand for land reclamation.



IN-HOUSE R&D CENTRE

RESEARCH FACILITIES

GEOTECHNICAL LAB



MATERIAL LAB



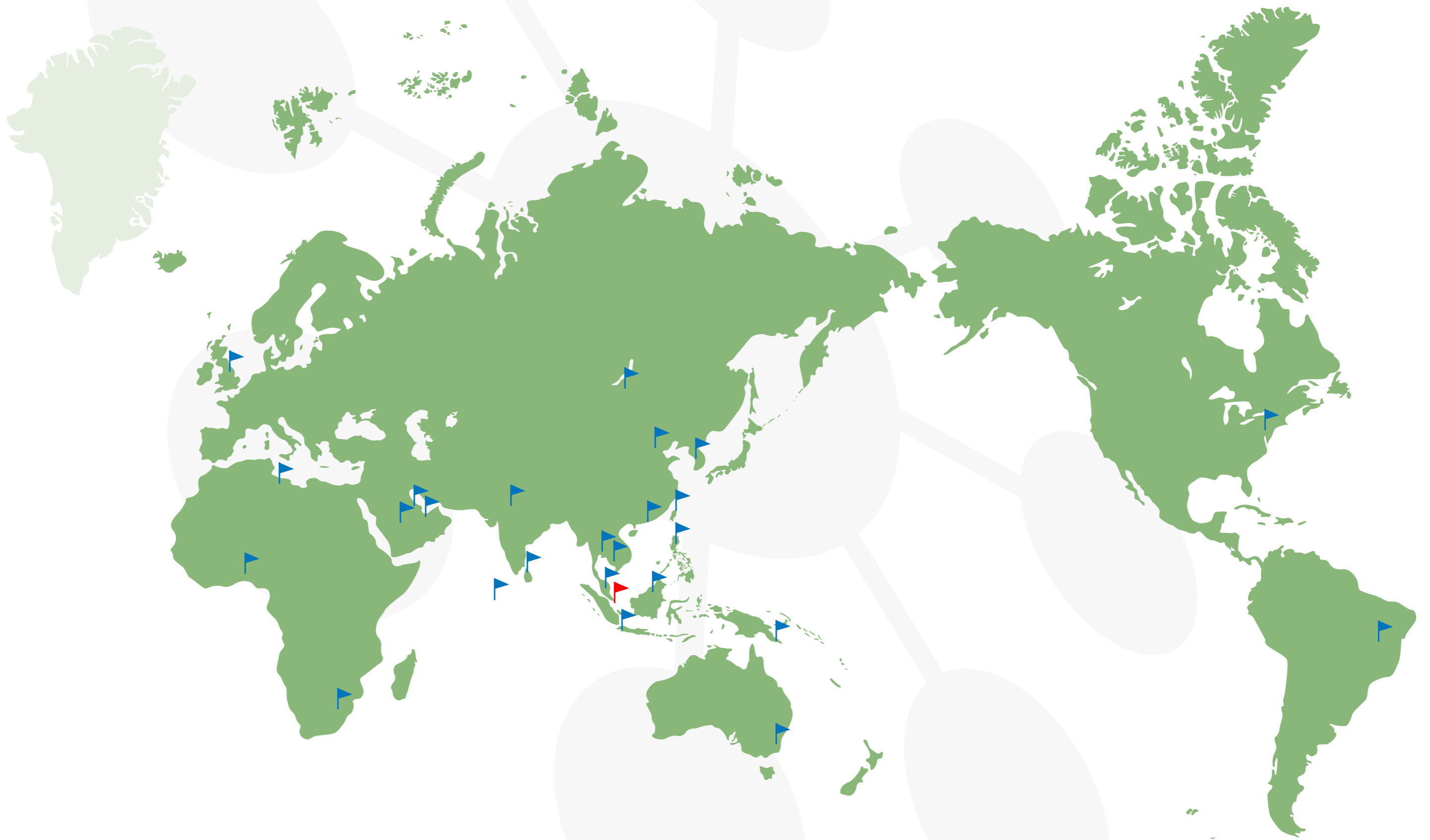
CHEMICAL LAB



ENVIRONMENTAL LAB



OUR NETWORK



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