SAHTECH 年報

Annual Report

2023

SAHTECH 財團法人 安全衛生技術中心
SAFETY AND HEALTH TECHNOLOGY CENTER

財團法人安全衛生技術中心 2023 年報

沿革

財團法人安全衛生技術中心（SAHTECH）於 2007 年 1 月獲得主管機關勞動部（原行政院勞工委員會）審核認可，並於 2007 年 2 月經法院公證後，於 2007 年 3 月 1 日正式成立。本中心定位為安全衛生整合技術與管理系統服務提供者、為政府部會的優質智庫與產業永續發展的好伙伴、國際標準制定與推動者，並結合保險保全業創造客戶價值。本中心期許能成為亞太地區先進的安全衛生環保技術研發與創新服務機構。

本中心同仁學歷約有 18%博士、56%碩士，團隊成員安衛相關實務年資平均 20 年以上，領有工安技師與合格職業安全衛生專業證照者有 40%。主要研發與服務項目包含高科技安全、化學品安全、製程安全、機電安全、綠能安全、風險管理、安全節能、企業營運持續管理、環安衛管理、產物保險損害防阻、有害氣體監控、生物安全等設備開發、軟體設計與系統建置。

本年報印製日期 04.2024

經營團隊

創始捐助人

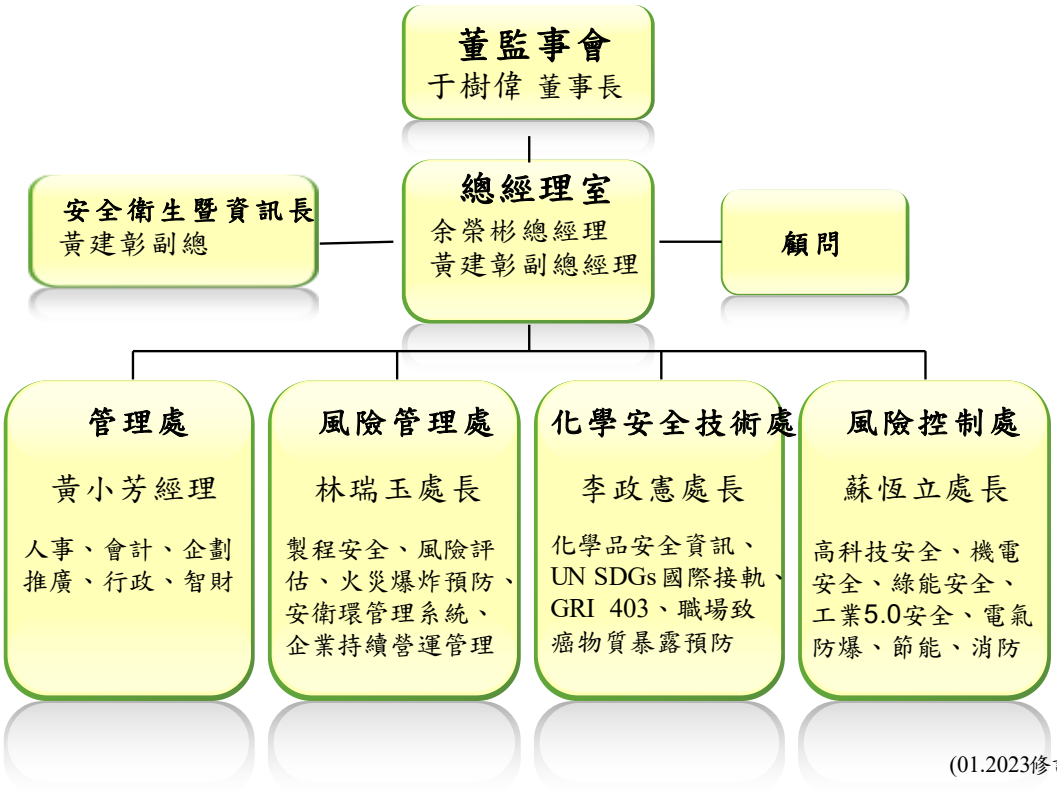
中華民國工業安全衛生協會
李祖原聯合建築師事務所
東京威力科創股份有限公司
富邦產物保險股份有限公司
漢民科技股份有限公司
優貝克科技股份有限公司
賴世龍先生（台北市工業安全衛生器材商業同業公會創會理事長）

第六屆 董監事成員（2022~2024）

董事長　于樹偉博士（安衛中心董事長、前工研院環安中心主任）
董　事　余榮彬博士（安衛中心總經理、前工研院環安中心副主任）
董　事　傅武雄博士（前交通大學工學院副院長）
董　事　戴基福先生(中華民國工業安全衛生協會榮譽理事長、前勞委會勞工安全衛生研究所長）
董　事　施延熙先生（前工業局組長）
董　事　林金穗先生（富邦產險公司資深副總經理）
董　事　陳哲郎先生（李祖原聯合建築師事務所副總經理）
董　事　陳文龍先生（前內政部消防署長）
董　事　趙坤郁醫師（前衛生署國健局副局長）

常務監事 賴世龍先生(典試科技股份有限公司總經理、台北市工業安全衛生器材商業同業公會創會理事長）
監　事　黃建彰博士（安衛中心副總經理、前工研院環安中心組長）
監　事　陳俊瑜博士（前經國管理暨健康學院校長）

組織架構



(01.2023修訂)

經營理念

定位

1.安全衛生整合技術與管理系統服務提供者，為政府部會的優質智庫與產業永續發展的好伙伴。
2.國際標準制定與推動者，並結合保險、保全業界創造客戶價值。

願景

成為「亞太地區先進的安全衛生環保技術研發與創新服務機構」。

策略

1.以優異的核心技術與創新模式提供客戶滿意的服務；
2.以誠信、尊重及穩健的經營提供同仁優質工作環境；
3.專注於安全衛生環保與風險管理業務，善加運用政府與民間資源，並強化差異區隔及附加價值，以厚植技術與服務能量。

2023 經營績效

財團法人安全衛生技術中心在 2023 年持續運用智慧科技提供高品質的技術服務，協助政府因應國際發展趨勢推動職安衛永續發展、綠能安全、化工製程安全、機電系統安全、職場致癌化學品管理、小型及微型企業安全衛生改善、菸品健康風險管理等相關計畫。也利用委託服務協助半導體、面板顯示器、電子、設備、鋼鐵、石化、化材、紡織、物流及其他等相關企業，設計與營運朝向淨零排放且更安全的設備、製程、工作環境與管理系統。本中心 2023 年配合政府委辦或自行舉辦之研討會與訓練班約 170 場，業界參與受訓人員合計約 16,000 人，並臨場協助約 1,600 家事業單位。

本中心參考全球報告倡議組織之職業健康與安全揭露準則（GRI 403），協助勞動部職安署推動職場 SDGs 永續健康與安全發展計畫，訂定電子業、金融保險業、建材營造業、食品工業及化學工業等參考評量，主動評比「企業永續報告公開職業健康與安全指標」績優上市上櫃公司，並表揚第一屆健康勞動力永續領航企業。本中心也提供 ISO 45001 職業安全衛生管理、ISO 31000 風險管理、ISO 22301 企業營運持續管理、GreenScreen®化學品綠色篩選等技術服務，協助企業展現 ESG 績效。本中心擴大協助半導體廠之鄰近化學品循環減量回收設施的製程安全及防火安全設計，以協助高科技業順應 2030 年聯合國永續發展目標，其中包含氫氣、特殊化學品、溶劑等。

本中心協助職安署發表事業單位版 Chembeep APP 影像辨識與訓練行動應用程式，協助事業單位辨識化學品安全資訊，已被下載超過 3,000 次；並開辦化學品供應商混合物 SDS 製作及使用商查核 SDS 等能力提升訓練。本中心參訪芬蘭致癌物質勞工登記中心（ASA），並參與歐盟化學署（ECHA）加速化學品風險評估會議，規劃修訂我國致癌化學物質管理相關法規，並臨場輔導使用較多量 CMR 物質之事業單位 700 廠，加計去年的 700 廠，共輔導 1,400 廠。本中心協助職安署推動之相關業務包含優先管理化學品報備審查、管制性化學品許可管理、化學品商業機密保護等作業，以及擴充化學品資訊應用管理平台。

本中心持續協助政府相關部會擴建化學品管理制度並提升安全健康等保護績效，並多次於歐盟、美國、澳洲等國際研討會及亞太經合會（APEC）中，分享我國化學品管理經驗。本中心邀請技術合作夥伴日本經產省行政法

人製品評價技術基盤機構（NITE）及韓國環境部化學管理協會（KCMA）來台交流化學品管理經驗及工具，並協助經濟部產業發展署共同對外界分享化學品管理法規進展，也邀請日本產業環境管理協會（JEMAI）分享供應鏈產品化學物質管理趨勢與日本 chemSHERPA 軟體。也協助經濟部標準檢驗局研討日常用品中揮發性有機物檢驗法草案研擬計畫。本中心協助衛福部國健署管理菸品中化學物質申報資料，約計受理菸品申報 420 家次（100 家業者）及 4,900 項次。另協助菸品成分資料申報系統及網站之管理，及指定菸品健康風險評估審查。本中心也參與農業部防檢署化學農藥十年減半計畫，落實農藥分級管理制度，並辦理施藥安全防護種子師資班。

本中心協助職安署推動石化及使用化學品工廠製程安全管理輔導，分享運用 AI 新科技強化管理及防災作為，以協助甲類危險性工廠消減重大火災、爆炸或毒氣外洩事故；也提供可燃性粉塵工作場所火災爆炸危害預防參考手冊、安全關鍵性設備篩選實務手冊供業界參考。本年度完成 1,197 種反應組合之不相容性列表資訊，加計 111 年度的 1,081 種，合計共 66 種官能基或化合物、2,278 種反應組合。今年度提供石化業設備管線腐蝕劣化及製程安全評估技術輔導計 100 家，其中包含模擬分析外洩或火災爆炸之後果。本中心辦理製程安全評估人員訓練，包含業界 90 人及勞動檢查員 32 人，另辦理事業單位內部稽核員訓練約 60 人。

製程安全技術對半導體相關科技業之服務，包含硫酸、氫氟酸、矽甲烷、過氧化氫、氫氣等供應或回收系統之相關製程後果模擬、防爆區域劃分、安全控制及消防。而石化與其他傳產之安全服務，包含對苯二甲酸、丙二醇甲醚、丙烯腈、其他特定化學物質及公共危險品之製程、設備或儲存場所的量化風險評估與改善設計。本中心持續與工研院材化所合作，以腐蝕防護、危害與可操作性分析、故障樹分析、儀錶系統安全完整性等級（SIL）、保護層分析（LOPA）等技術服務客戶。也提供製程安全評估、擴散模擬、變更管理、機械完整性、內部稽核與訓練等服務。

本中心協助職安署收集先進國家有關職場大量氫氣處置之安全法規，並協助勞動部勞安所探討鋰電池儲能系統之職場危害預防規範。本中心協助職安署輔導事業單位改善高風險機械與系統之工作環境，合計約協助 240 廠次產線製程設備及高風險工作場所之安全衛生改善。本中心持續與工研院綠能所合作，提供防爆電氣設備安全諮詢及現場輔導改善，合計約協助 100 廠，

包含燃氣鍋爐防爆區域劃分。本中心與技術合作夥伴工研院綠能所及台灣 UL Solutions 共同啟用防爆安全聯合訓練教室，培訓專業施工人員及安全檢查人員，今年度計開設 3 班，合計約 80 人。

本中心應美國半導體協會邀請於亞歷桑納鳳凰城 SESHA 安全衛生環保年會中專題演講半導體新建廠風險與挑戰。本中心提供潔淨室安全技術服務，包含利用三維流場模擬火災煙霧控制策略及人員避難模擬、佈設製程區化學火災危害偵測系統、以智能通風消減潛在缺氧危害、以紅外光譜儀量測技術調整製程機台與化學排氣櫃較適安全節能排氣、以國際消防與產險標準精進廠房安全等。設備與廠務安全服務則包含 SEMI S2、S6、S10、S18、S22、S23 與 S26 評估、機台防震、設備源頭安全設計等。也擴大參與科技廠海外廠房的化學品合規性諮詢、建廠安全及操作中無塵室火災模擬及煙霧控制。

本中心提供電氣安全、化學品暴露評估、職業健康管理等工業服務，協助客戶提昇安衛環、消防與能源管理績效，技術工具包含電力負載紅外線熱影像、設備接地電阻、超音波測漏、職衛暴露危害等量測或評估。本中心與工研院材化所及大學合作，利用成份分析、火災鑑定、事件樹分析、反應組合不相容性分析法等技術及自有之軟體工具，協助產物保險公司調查火災理賠案件，包含自動物流倉儲、太陽光電發電場域、半導體廠、電子廠、鋁鎂合金廠、石化廠、高級飯店、娛樂用品廠，以及具有鋰電池設施之場所等。本中心協助台商海外廠房增進防火防災量能及企業營運持續管理，以提升營運韌性，也協助廠商因應國家化學品管理制度提交環境部化學署之化學品安全評估報告，包含定量毒理推估，累計約有 135 份報告經審查獲准通過。

本中心開發安衛智能幫手，包含「智能圖庫」及「智能點檢」，提供中小企業運用並推廣安衛危害預防知識，可提供 10 種常用機械之危害點檢 QR code，並可匯出自動檢查項目及檢查週期清單。改善工作環境計畫包含訓練與支援縣市政府，協助約 470 位輔導人員對約 1 萬家 100 人以下之小型與微型企業（87%為勞工數 30 人以下）提供約 17,600 場次臨廠職安衛危害改善輔導，並包含約 3,100 家僱用外籍移工及原住民勞工之事業單位，也持續製作安衛教育訓練教材及海報，以供下載。本中心持續協助約 937 家通過 TOSHMS 驗證的事業單位提升職安衛管理績效。本中心協助國科會新竹科學園區管理局培訓企業職業安全衛生及風險管理實務人員，協助中華郵政、工研院等機構提升安全文化並增進工作場所安全衛生。

本中心為推廣安全衛生應用技術與管理實務，2023 年舉辦之研討會與訓練班內容涵蓋職場永續健康與安全 SDGs 揭露實務、安全數位科技應用於承攬商作業管制、無人機太陽光電案場巡檢應用、鋰電池儲能系統與作業安全、風險評估與科技防災技術、科技業甲類工作場所製程安全管理、警報管理實務、製程安全管理與內部稽核員訓練、機械完整性之安全關鍵性設備篩選、日韓化學物質管理趨勢、化學品源頭廠商危害資訊管理、職場致癌化學物質危害預防、安全資料表查核、化學品危害分類標示與通識、職場化學性危害暴露評估、職場化學性危害進階定量暴露評估、優先管理化學品之指定及運作、農藥施用安全防護、菸品資料申報及健康風險評估、火災爆炸危害預防、燃氣鍋爐與防爆危害預防、防爆電氣配線施工與監工、防爆危險區域暨劃分軟體應用、用電驗電安全實務、機電危害預防、協同作業機器人安全評估、HSG245 職業安全事故調查、外籍移工職業安全衛生管理實務、ISO 45003 職場心理健康風險與關懷、CNS 45001 職安衛管理系統與促進會係列、縣市中小企業工作環境改善與安衛家族訓練等。

本中心網站及幫政府經營的計畫網站，如中小企業安全衛生資訊網、台灣職業安全衛生管理資訊網、廠場化學品重點管理資訊網、國際化學品政策宣導網、農藥標示暨 GHS 化學品全球調和制度資訊網、GoChem 企業化學品管理資訊網、製程安全管理資訊應用與交流平台、臉書粉絲專頁等，每月瀏覽人數約 250,000 人。也定期發行國際化學品法規電子短訊、中小企業安全衛生電子報等，利用電子郵件、行動通訊 APP 與網路社群分享新知。

本中心積極贊助、參與安全衛生永續技術相關公益促進活動，如職業衛生暨職業醫學國際學術研討會、台灣安全文化學術論壇、台北國際防火防災應用展暨工業安全與管理研討會、台灣化學產業協會高峰論壇暨展會、超臨界流體技術應用與發展研討會、化學年會、氣膠國際學術研討會、PM2.5 控制與淨零永續碳中和的實現路徑研討會、台灣光觸媒產業發展協會會議等。本中心也積極參與相關產協會活動，並向國內相關主管機關提出建言。本中心頒贈第六屆「財團法人安全衛生技術中心獎學金」，獎勵 7 位大專院校學生修習安全衛生相關課程及參與相關專題或論文研究。

本中心 2023 年員工約 49 人，約執行 1.7 億元委託案，其中約有 52%的經費來自業界。附件一為本中心 2023 年大事紀，附件二則為政府主要委託計畫之執行摘要，業界委託計畫則因保密協定未列於年報中。業界客戶除數

家知名顧問公司及國際產物保險與公證公司外，也包含台積電、美光、華邦、群創光電、友達光電、光寶集團、東京威力、漢民科技、京元電子、優貝克、英特格台灣、漢鐘真空、愛德華先進、台灣荏原、台灣是德、盟立自動化、美商柯磊、東洲檢測、承鈞科技、鈦昇科技、矽科宏晟、晁晟奈米、盛技精密、心源工業、旭霸電機、台達電、中華化學、台塑企業、長春石化、長興材料、永光化學、勝一化工、奇鈦科技、台灣信越、台灣波律、馬光化工、美時化學、台灣愛迪科精密化學、康普材料、台灣公利洋行、第一伸銅科技、金隆化學、亞東氣體、聯華氣體、法蘭摩沙、光隆實業、台灣菸酒、永潤食品、鼎佳能源、泰興工程、立盈環保、成信實業、華聯工程、水之源、奕成、中華郵政、晶彩物流、佳辰科技、住華顧問、英國標準協會北美顧問、賽維特保險、麥理倫公證、怡安保險、達信、嘉福湯瑪遜保險、第一產險、知性國際、工研院等，以及美中日等資通訊、面板與化材大廠。

本中心以關懷回饋「安全衛生及永續發展」為理念，不僅積極協助政府推動相關工作，也協助產業界提升技術能量與發展產業自發之安全衛生及永續發展指引，將持續贊助相關公益事務，期能善盡企業社會責任。

活動照片

2023.02 美國聖地牙哥 APEC SOM I 化學對話(CD)會議-林俏萱經理(左一)

2023.02 年度策略規劃會議

2023.03 ChemCon 化學品安全紐約會議-吳兆瑋主任工程師(右一)

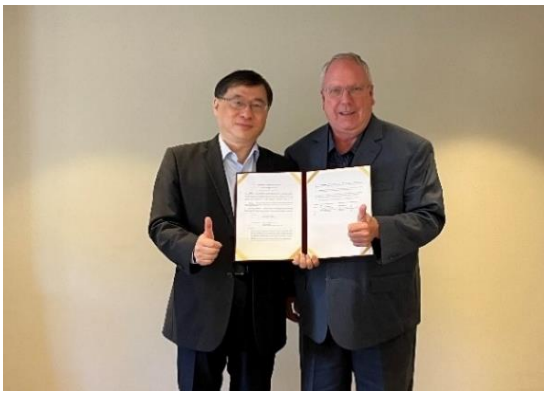
2023.03 防爆施工班-林慶峰技術經理(前排右四)、張文昇主任工程師(前排右一)

2023.03 廠場致癌化學物質暴露危害預防訪視調查-陳志信工程師(右一)

2023.04 林以辰博士參訪芬蘭致癌物質勞工登記中心（ASA）

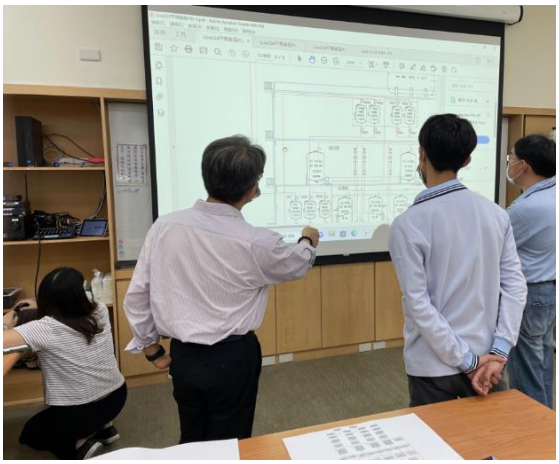
2023.04 SDGs 與職業健康績效論壇-李政憲處長(左一)、職安署張國明組長(左二)、余榮彬總經理(左三)、職業衛生學會蔡奉真秘書長(右一)

2023.04 黃建彰副總應美國半導體協會邀請於亞歷桑納鳳凰城 SESHA 安全衛生環保年會中專題演講半導體新建廠風險與挑戰



2023.04 黃建彰副總與美國 PADRE 董事長簽訂美加地區半導體安環消防顧問服務 MOU

2023.04 職場安全健康週-余榮彬總經理(左一)、林毓堂副署長(左四)



2023.05 石化業製程安全評估技術臨廠輔導-林敬凱技術經理(左立一)

2023.05 食品加工業防爆電氣臨廠輔導-盧以霖主任工程師

2023.05 與技術合作夥伴工業技術研究院及台灣 UL Solutions 共同啟用防爆安全聯合訓練教室，培訓專業施工人員及安全檢查人員-余榮彬總經理(左一)

2023.05 參與勞動部第二屆臺比勞動政策與職業安全衛生研討會，與比利時魯汶大學學者、比利時 BARCO Taiwan 總經理及職安署暢談 GRI 403 職場健康勞動力與企業永續發展

2023.05 于樹偉董事長於 TOSHMS 南區促進會專題演講安全文化

2023.06 台南遊艇業作業現場通風改善輔導-張家翰技師(右)

2023.06 TOSHMS 北區促進會-于樹偉董事長 (前排左三)

2023.07 協助彰化縣辦理原住民日安衛政令宣導-陳碧婷經理(左二)、林田富副縣長(左三)

2023.07 南科光電與半導體業製程安全管理集體輔導-林瑞玉處長

2023.08 菸品資料申報說明會-方澤沛博士

2023.08 美國舊金山 APEC SOM III 化學對話(CD)會議-陳佳君經理(右三)

2023.08 台電南鹽光儲能站訪視-左起曾迪農經理、蘇恆立處長、黃建彰副總

2023.09 越南永龍羽絨成衣建廠安全輔導-左起劉維義經理、張家翰技師

2023.09 石化及化學工廠製程安全管理輔導-戴啟夫博士(右四)、丁憶淇主任工程師(右五)、張福慶技術經理(右六)

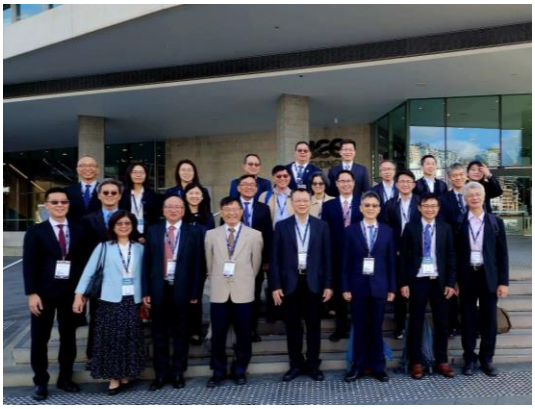
2023.09 供應鏈產品化學物質管理趨勢與日本 chemSHERPA 工具說明會

2023.09 發電廠製程安全管理輔導-張福慶技術經理(左一)

2023.10 電子業集團常州廠內部稽核員訓練-林敬凱技術經理(右二)、劉維義經理(右三)

2023.10 協同作業機器人安全評估報告研討會-邱祺文主任工程師

2023.10 農藥施用安全防護教育訓練班-李政憲處長(右一)、陳佳君經理(左一)



2023.11 澳洲雪梨世界職業安全衛生大會台灣團-余榮彬總經理(前排右五)、職安署鄒子廉署長(前排右四)

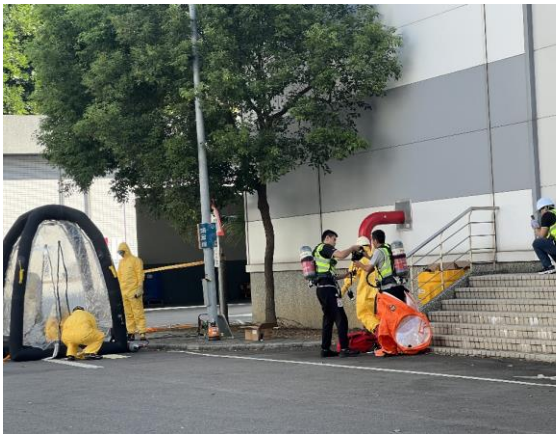
2023.11 日本及韓國化學品管理最新趨勢說明會

2023.11 職場永續健康與安全成果發表會

2023.11 政府機關推動職業安全衛生績效評核及輔導-協助苗栗縣政府公共工程安衛查核-張家翰技師(左一)

2023.11 技術合作夥伴日本經產省 NITE 及韓國環境部 KCMA 來台南交流化學品管理經驗

2023.11 TOSHMS 三區促進會成果發表會-余榮彬總經理(右四)、林毓堂副署長(右三)



2023.11 電子業製程安全管理觀摩會-火災及化災複合式演練、LPG 滅火體驗及防護具 AI 訓練

2023.12 職場安全智能防災研討會-前排左三起余榮彬總經理、職安署鄒子廉署長

2023.12 職場安全智能防災研討會科技防災應用展演-蘇恆立處長(右一)

附件一 財團法人安全衛生技術中心 2023 年大事紀

日期	大事紀
1 月	● 執行勞動部職安署委託之推動職場永續健康與安全發展計畫。 ● 執行職安署委託之廠場 CMR（致癌性、致突變性、生殖毒性）化學物質暴露預防計畫。 ● 執行職安署委託之推動廠場化學品危害預防管理計畫。 ● 執行職安署委託之石化及使用化學品工廠製程安全管理輔導計畫。 ● 與工研院共同執行職安署委託之補助中小企業新購檢定合格防爆電氣設備計畫。 ● 執行衛福部國健署委託之菸品資料申報暨菸品成分網站管理計畫。 ● 執行農業部防檢署（原農委會防檢局）委託之推動我國農藥標示暨施用安全防護精進管理計畫。 ● 持續參與晶圓代工廠日本建廠及化學品安全資訊顧問服務。 ● 執行晶圓代工廠零廢中心、創生中心等廠務安全顧問服務。 ● 執行高科技廠鋰鐵電池應用安全深化專案計畫。 ● 持續提供產物保險公證人及法院之火災事故調查服務。 ● 持續提供電子大廠海內外廠區營運持續管理系統技術輔導服務。 ● 持續以會員身分積極參與新全球報告倡議組織 GRI 標準系列之增修。 ● 提供企業永續發展策略暨永續報告編撰與溫室氣體盤查輔導服務。 ● 辦理內部智慧財產權保護及資安強化。
2 月	● 執行勞動部職安署委託之中小企業改善工作環境及促進就業服務統籌支援計畫。 ● 執行工研院轉委託經濟部產業發展署（原工業局）之國際化學品管理 REACH 策略推動計畫。 ● 協同職安署參加美國聖地牙哥棕櫚泉亞太經合會（APEC）化學對話 SOM I CD 會議。
3 月	● 執行職安署委託之政府機關推動職業安全衛生績效評核及輔導作業計畫。 ● 執行勞動部勞安所委託之鋰電池儲能系統之職場危害預防與規範研究計畫。 ● 執行經濟部標檢局委託之日常用品中揮發性有機物檢驗法草案研擬計畫。 ● 應 2023 ChemCon 邀請於美國紐約會議分享化學品管理技術。

日期	大事紀
4　月	● 執行職安署委託之我國職業安全衛生管理制度推動業務計畫。 ● 執行職安署委託之高風險事業單位製程安全資料庫與評估技術建置計畫。 ● 執行職安署委託之推動我國職業安全衛生業務與國際交流合作計畫。 ● 應美國半導體協會邀請於亞歷桑納鳳凰城 SESHA 安全衛生環保年會中專題演講半導體新建廠風險與挑戰。 ● 協助 2023 職業衛生暨職業醫學國際學術研討會辦理職業健康績效與永續發展目標論壇。 ● 協助台北國際防火防災應用展辦理工業安全與管理年會。 ● 派員參訪芬蘭致癌物質勞工登記中心（ASA），並參與歐盟 ECHA 年度加速化學品風險評估會議。 ● 與美國 PADRE 公司簽訂美加地區半導體安環消防顧問服務合作備忘錄。 ● 頒贈第六屆獎學金給 7 位大專院校學生。
5　月	● 執行職安署委託之輔導高風險、高職災、高違規（3 高）之事業單位改善安全衛生工作環境計畫。 ● 執行國科會新竹科管局委託之園區安全衛生人員精進計畫。 ● 與技術合作夥伴工研院綠能所及台灣 UL Solutions 共同啟用防爆安全聯合訓練教室，培訓專業施工人員及安全檢查人員。 ● 協助勞動部勞安所第二屆臺灣比利時勞動政策與職業安全衛生研討會辦理職場健康勞動力與企業永續發展論壇。 ● 參與美國亞歷桑納鳳凰城工業衛生年會，並發表論文 2 篇。 ● 與英國標準協會美國專業服務公司（BSI America Professional Services Inc.）簽訂華語地區美商安環評估與提升合作備忘錄。 ● 2023 年第一次董監事會。
6　月	● 執行台塑集團製程安全第三方稽核工作。 ● 發表事業單位版 Chembeep APP 化學品危害資訊影像辨識與訓練行動應用程式。
7　月	● 執行工研院委託之全員參與安全衛生活動計畫。
8　月	● 執行國健署委託之指定菸品健康風險評估審查專案管理計畫。 ● 協同職安署參加美國西雅圖亞太經合會（APEC）化學對話 SOM II CD 會議。
9　月	● 協助產業發展署邀請日本產業環境管理協會（JEMAI）辦理供應鏈產品化

日期	大事紀
	學物質管理趨勢與 chemSHERPA 工具說明會。
10 月	● 協助職安署選拔第一屆健康勞動力永續領航企業，以引領企業強化 SDGs 之職場勞動與安衛。
11 月	● 協助職安署辦理職安衛五星獎頒獎典禮暨職業安全衛生管理 TOSHMS 促進會聯合成果發表會。 ● 邀請技術合作夥伴日本經產省行政法人製品評價技術基盤機構（NITE）及韓國環境部化學管理協會（KCMA）來台交流化學品管理經驗及工具，並協助產業發展署共同對外界分享化學品管理法規進展。 ● 協同職安署參與於澳洲雪梨舉辦之世界安全衛生大會，並發表論文 4 篇。 ● 2023 年第二次董監事會。
12 月	● 協助職安署辦理製程安全管理、科技防災技術應用、中小企業安衛改善聯合研討會。 ● 年度結算約舉辦研討會與訓練班約 170 場，受訓學員約 16,000 人。 ● 全職員工 49 人。年度結算約執行 1.7 億元委託案，其中約有 52%的經費來自業界。

2023 SAHTECH Report

April 2024

About SAHTECH

SAHTECH, a non-profit organization, was founded in 2007 with donations from Industrial Safety and Health Association of R.O.C. (Taiwan), CY LEE & Partners Architects, Fubon Insurance Co., Hermes Epitek Co, Tokyo Electron Ltd., ULVAC, and Mr. Tony Lai. SAHTECH aims to be a major player in the field of safety, health and environment (SHE) technology and services in the Far East. It is noteworthy that 18% of SAHTECH staff hold Ph.D. degree, and 56% have master's degree. Among them, 20% of them are graduates of internationally renowned universities. Many of them are certified safety professionals, certified industrial hygienists, certified occupational safety and health (OSH) management specialists, certified functional safety engineers, certified ISO 45001 lead auditors, and certified ISO 50001 lead auditors. Our highly experienced specialists provide complete range of SHE services to clients. In average, people working in SAHTECH have about 20 years of OSH experiences.

Board of Directors (2022~2024)

Dr. Shuh Woei Yu (Chairman of SAHTECH; ex-Director General of Center for Environmental, Safety and Health Technology Development (CESH), Industrial Technology Research Institute (ITRI))

Dr. Jung-Pin Yu (President of SAHTECH; ex-Deputy Director General of CESH, ITRI)

Dr. Wu-Shung Fu (ex-Deputy Dean of Engineering College, National Chiao Tung University)

Mr. Ji-Fu Dai (ex-Director General of IOSH, Ministry of Labor)

Mr. Xi ShihYuan (ex-Director, Industrial Development Bureau, Ministry of Economic Affairs)

Mr. Jin-Sui Lin (Senior Vice President of Fubon Insurance Co.)

Mr. Je-lang Chen (Vice President of CY LEE & Partners Architects)

Mr. Wen-Long Chen (ex-Director General of National Fire Agency, Ministry of Interior)

Dr. Kun-Yu Zhao (ex-Deputy Director General of Health Promotion Bureau, Ministry of Health)

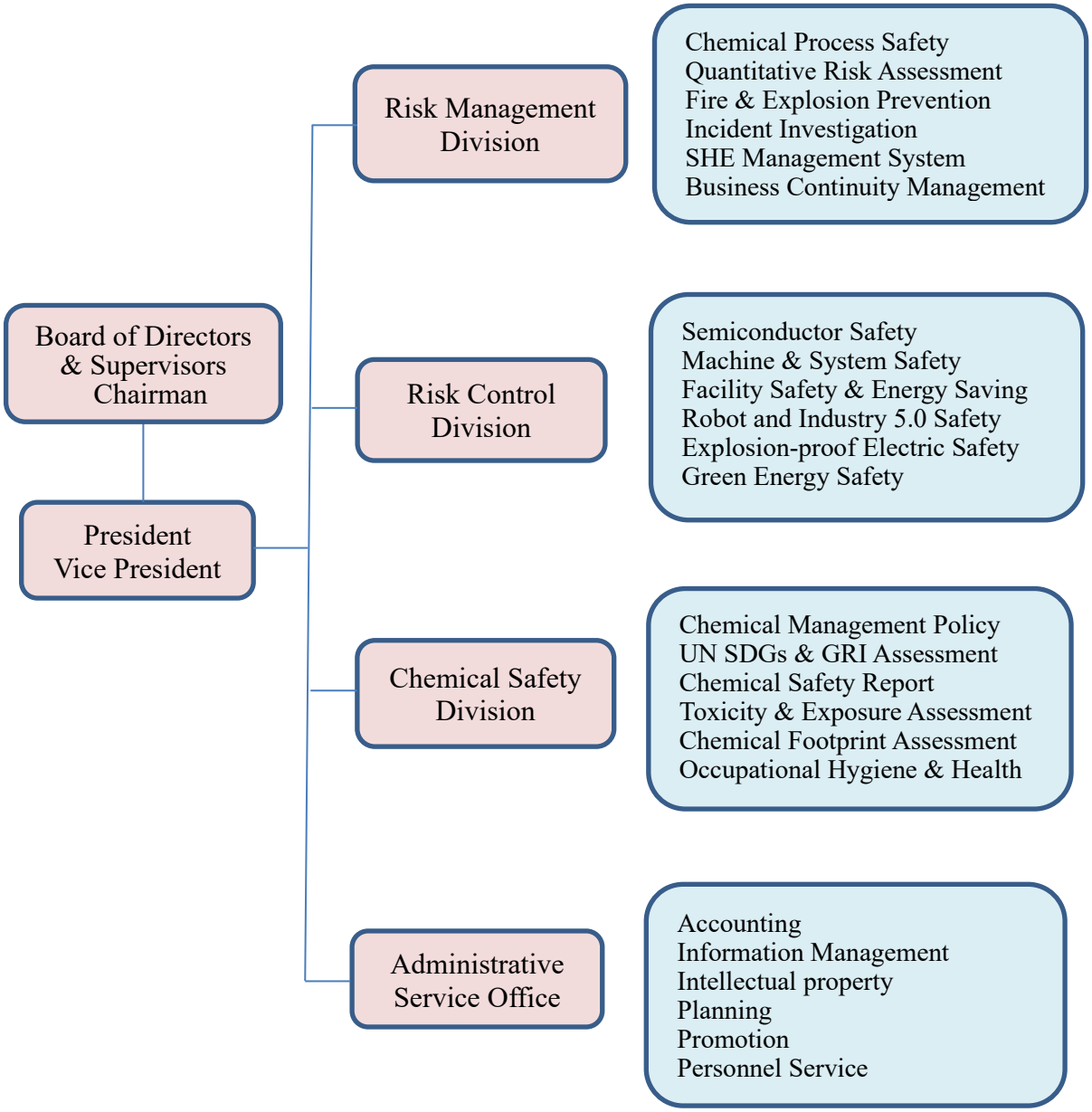
Board of Supervisors (2022~2024)

Mr. Tony Lai (Standing Supervisor of SAHTECH；President of Data Test Scientific, founding Chairman of Taipei Industrial Safety & Hygiene Product Commerce Association)

Dr. Chun-Yu Chen (ex-President of Ching Kuo Institute of Management & Health)

Dr. Cheng-Chang Huang (vice President of SAHTECH; ex-Director of CESH, ITRI)

Organization Chart



01.2023

Achievements

SAHTECH continues to leverage proven technology to provide high-quality technical services. As an essential think-tank for Taiwan government agencies and a technical partner for industries, SAHTECH has facilitated the basic regulatory implementation of sustainable development of occupational safety and health (OSH), green energy safety, chemical process safety, mechanical and electrical safety, management of workplace carcinogenic chemicals, OSH improvement for small business entities, and health risk assessment of heated tobacco products. SAHTECH has used entrusted services to help industries design and operate safer machinery, processes, workplaces and management systems towards the SDGs goals and net-zero emissions.

SAHTECH assisted MOL OSHA in rewarding the listed and IPO companies for their active promotion of responsible value chain management in OSH related activities and sustainability goals. Ten companies of electronics, financial and insurance, building materials and construction, food, and chemical industry were honored the first Healthy Workforce Sustainability leading award, for excellent performance of OSH, labor conditions and social responsibility beyond the OSHA's GRI 403 sector guidance. SAHTECH also provided technical services such as ISO 45001 OSH management, ISO 31001 risk management, ISO 22301 business continuity management, and chemical GreenScreen® to help companies upgrade ESG performance. SAHTECH continued to assist semiconductor factories in the safety design of chemical recycling and reuse facilities, to comply with the 2030 UN SDGs, including heavy metals, hydrogen, solvents, etc.

SAHTECH assisted MOL OSHA in releasing the Chembeep, a chemical hazard information image recognition and training APP. The APP has been downloaded more than 3,000 times. SAHTECH held chemical mixture SDS preparation seminars for suppliers and provided SDS audit training for users. SAHTECH visited the Finnish Register of Workers exposed to carcinogens (Arbetsgivaren ska anmäla, ASA) and participated in the accelerated chemical risk assessment meeting of European Chemicals Agency (ECHA). SAHTECH assisted OSHA in planning Taiwan's workplace carcinogen management regulations. In addition to counseling 700 SMEs that used large amounts of CMR substances in 2022, SAHTECH also provided on-site prevention counseling to another 700 medium and large-sized factories in 2023.

SAHTECH operated the Chemical Management Office on behalf of OSHA. It played an important role in mobilizing technical supports to facilitate the collective national chemical management scheme. SAHTECH assisted OSHA to implement required-submit priority chemical management, controlled chemical permission, proprietary confidential business information (CBI) protection, etc. SAHTECH accompanied OSHA participating the APEC America Meeting of Chemical Dialogue. Acting as the GHS implementation focal point of Taiwan, SAHTECH hosted the APEC GHS Gateway Website for sharing labelling elements in 38 languages, a.k.a. the G.R.E.A.T. Project on behalf of MOL.

SAHTECH continues to assist relevant government ministries to expand chemical management systems, improve safety and health protection performance, and share national chemicals management experience at international seminars such as the European Union, the United States, Australia, and APEC. After the pandemic, technical partners Japan NITE and Korea KCMA were invited to Taiwan to exchange chemical management experiences and tools.

SAHTECH served as a special-task office of tobacco additive notification management and toxicity information examination for the Health Promotion Administration of Ministry of Health and Welfare, including heated tobacco products. SAHTECH assists the Industrial Development Administration of the Ministry of Economic Affairs (MOEA) to help export companies concern with various countries' REACH regulations and the United Nations SDGs 2030 sustainability goals. SAHTECH also shared industry the latest chemical management trends in Korea and Japan. Japan Environmental Management Association for Industry (JEMAI) was invited to share supply chain product chemical substance management trends and Japan's chemSHERPA software. SAHTECH helped the Bureau of Standards, Metrology and Inspection (BSMI) of MOEA studying the general rules on volatile organic compounds' limits in daily necessities. Participating in the ten-year halving plan of chemical pesticides of the Ministry of Agriculture (MOA) by year 2028, SAHTECH assisted MOA to implement the pesticide hierarchical management system and conducted the training of pesticide application safety protection trainers. SAHTECH also provided OSH trainings for the Hsinchu Science Park Administration Bureau of the National Science and Technology Council.

SAHTECH assisted OSHA to collect relevant safety regulations for the handling of large quantity of hydrogen in the workplace, and assisted the Institute of Labor, Occupational Safety and Health of the MOL to discuss workplace hazard prevention and regulations for lithium battery energy storage systems. SAHTECH helped OSHA promote the safety management guidance of petrochemical and semiconductor factories, sharing the use of new AI technology to strengthen management and disaster prevention, to reduce major fire, explosion, and toxic gas release accidents. The reference manual of safety assessment practices and procedures for dust explosion was published. Incompatibility information has been completed for 1,197 reaction combinations in 2023, and 1,081 in 2022, for a total of 66 functional groups and 2,278 combinations. SAHTECH provided on-site consultation on pipeline corrosion and process safety assessment to 100 petrochemical industry companies, including simulation analysis of leaks or fire and explosion consequences in 2023. SAHTECH trained certified process safety assessors, including 90 industry personnel, 32 labor inspectors, and 60 internal auditors.

SAHTECH helped OSHA conduct on-site consultation to improve the explosion-proof electrical equipment safety of 100 factories, including the explosion-proof zoning of gas boiler sites, by collaborating with the Green Energy and Environment Research Laboratories of ITRI. The safety of potential high-risk machinery and systems, including human-machine collaborative robots, and 240 factories and 50 automated production lines were also assisted.

SAHTECH helped OSHA monitor the performance of TOSHMS, the enhanced version of ISO 45001. Around 937 organizations retained certificates in 2023, where 10%, 15%, 14% and 61% of them were composed of less than100, 100~200, 200~300 and more than 300 workers, respectively. Three TOSHMS Families have been organized and in operation, with the help from SAHTECH, to share OSH best practices, such as emergency response preparedness, case study of accidents, HSG 245 investigating accidents and incidents, ISO 45003 occupational psychosocial safety, AR/VR training, and AI for high-risk operations.

SAHTECH has developed an OSH smart web assistant, including "OSH Picture Library" and "Smart Inspection", to provide SMEs with application and

promotion of OSH hazard prevention knowledge. The web contains 10 common mechanical hazards, provides self-inspection template QR codes, and can print inspection results and notify inspection cycles. SAHTECH helped OSHA facilitate all 22 local governments to provide basic OSH services to MSEs, with less than 100 workers, through the Dandelion Rooted Project. With the help of 470 OSH professionals, around 10,000 SMEs (87% of which have 30 or fewer employees), including 3,100 SMEs employing foreign workers and Aboriginal workers, were provided with on-site 17,600 on-site assistances in 2023. Each assistance provided 6 recommendations in average. SAHTECH also continued to produce OSH education and training materials and posters for download. For the past 16 years, statistics indicated that the average accident rate of the SMEs was reduced by 25.6% after receiving assistance for 2~3 years, while the reduction of general industries was 8.9 %. Some companies were also grouped into 255 regional Dandelion Families. OSH awareness of young workers was assisted by the SAHTECH mainly through this project.

In 2023, SAHTECH cooperated with the government to conduct about 170 seminars and training courses, with a total of about 16,000 industry participants and trainees. SAHTECH also assisted about 1,600 enterprises on-site. Websites managed by SAHTECH had around 250,000 visits monthly, and e-newsletters of MSEs OSH and chemical management were regularly distributed, including e-community media and mobile application software.

The premium contracts, both from the private and public sectors, bolstered SAHTECH's strategic sustainability, safety, health and environment (SHE) technology service position in Taiwan. Numerous chemical, ICT, LED, machinery, material, printed circuit board, semiconductor, steel, TFT-LCD companies, and service sectors received SAHTECH's technical services in 2023. Apple Taiwan, AUO, Delta Electronics, Ebara Taiwan, Edwards Vacuum, Entegris Taiwan, GPC Automation, Hermes Epitek, Innolux, Hembell Vacuum, Ifly Tech, I-Nanotech, Innolux, Keysight Technologies, KLA Taiwan, KYEC Electronics, Lite-on Group, Micron Taiwan, Mirle Automation, SERTC Testing Center, Taiwan Maxwave, Tokyo Electron Taiwan, tsmc, ULVAC Taiwan, Winbond, Adeka Fine Chemical Taiwan, Air Liquid Far Eastern, Chang Chun Petrochemical, Chimei Corp., Chitec Technology, Chung Hwa Chemical, Cica-Huntek Chemical, CoreMax specialty chemicals, Eternal Materials, Everlight

Chemical, Formosa Plastic Group, Framosa Co., KL Chemicals, Linde LienHwa, Lotus Pharm, Ma Kuang Chemical, ShinEtsu Taiwan, Shiny Chemical, Connell Caldic Food, Golden Harvest Food, Taiwan Tobacco & Liquor, First Copper Technology, Kwong Lung Enterprise, ChengJun Tech, China Engineers Associates, E&A Engineering, Liying Environmental, Pacific Engineers & Constructors, Shiba Electric, Shin-Yain Industrial, Toplus Energy, Transcene Recycling, WaterPark Environment, Chunghwa Post, DG Special, ITRI, Jointek Technology, NCKU, Aon Corporation, BSI Solutions, Crawford Solutions, First Insurance, Marsh Taiwan, Mclarens Taiwan, Sedgwick Hong Kong Limited, Sumika consulting, etc. were some of SAHTECH's clients in 2023. Notable technology activities are summarized below.

High-Tech Safety Services in Electronics Related Industries

SAHTECH was invited by the American Semiconductor Industry Association to give a keynote speech on the risks and challenges of new semiconductor fab at the Semiconductor Environmental, Safety and Health Annual Conference in Phoenix, Arizona. SAHTECH helped clients, in Taiwan and abroad, design safer facilities to meet international guidelines, codes and standards, such as API, ASME, FM, NFPA, SEMI, etc. Significant emerging technical services of year 2023 included safety design of zero waste centers of semiconductor complexes and US/Japan plants for an internationally renowned IC foundry were also delivered. Safety review of process tools and local scrubbers were provided. 3-D flow pattern simulation, personnel escape simulation, maximum foreseeable fire lose assessment, smoke control system, water mist system, explosion proof zoning, super-sonic leak detection, toxic gas monitoring system, and infrared thermo-image were commonly utilized in life safety and calamity control projects. Seismic vibration force minimization and anchor strength services were also provided for tools in the cleanrooms.

Safety review and control measures for the processes involving bulk hydrogen, hydrogen peroxides, air-sensitive hydrides, chlorine, waste isopropanol recovery systems and high ammonia nitrogen wastewater treatment systems were delivered. SAHTECH also participated in the process safety and fire safety design of the chemical recovery facilities adjacent to semiconductor factories to assist the high-tech industry achieve the 2030 United Nations

Sustainable Development and the 2040 circular economy Goals, including solvents and hydrogen.

Mechanical and Electrical Safety Services

SAHTECH provided contracted services of electromechanical safety and explosion zoning, especially for chemical, electronics and semiconductor industries. Taiwan Safety TS mark, grounding resistance, electromagnetic radiation measurement and explosion-proof, were frequently conducted in the services of equipment sign-off procedures. Cooperated with technical partners ITRI Green Energy and Environment Research Laboratories and Taiwan UL Solutions to launch a joint explosion-proof safety training classroom to train professional installation workers and labor inspectors, 90 explosion-proof electric professionals and 120 engineering supervisors in 2023.

Process Safety Management Services

Process safety assessment, management of change, and competence courses were offered to more than 300 engineers. Utilizing Hazard and Operability Study (HazOp), Layer of Protection Analysis (LOPA), Safety Integrity Levels (SIL), Safety Instrument System (SIS), AIChE PSM guidelines, ASME guidelines, IChemE guidelines, and SEMI S10, SAHTECH helped industrial clients in chemical, electronic and steel industries mitigate risks, and to meet the requirement of Taiwan OSHA regulations.

SAHTECH often cooperated with the Material and Chemical Research Laboratories of ITRI to provide comprehensive risk control measures of equipment and piping corrosion. Quantitative safety risk assessment of liquid ammonia, hydrogen, phosphine and silane processes were also delivered. Run-away reaction testing and software of process hazard analysis, ASTM reactive and flammability hazards CHETAH, and computational-fluid-dynamics explosion and dispersion modelling were commonly used. Major clients included Air Liquid Far Eastern, AUO, Chang Chun Petrochemical Co., Chimei Corp., Formosa Plastics Group, Innolux, Micron Taiwan and tsmc.

Accident Investigation Services

SAHTECH provided contracted accident investigation reports to numerous public notary companies and property insurers in 2023. Taiwan legal courts often consulted SAHTECH as a professional body regarding industrial accident and property loss.

Fire simulation modeling, sequentially timed events plotting, events and causal factors charting, why-tree analysis and some retro-fit laboratory tests were commonly incorporated in these reports. Services were also provided to mega logistics warehouses, semiconductor fabs, electronics factories, aluminum magnesium alloy factories, chemical factories, solar photovoltaic power generation fields, food processing factories, golf ball manufacturing factories, 5-star hotels, etc. Accident investigation seminars were also delivered.

Chemical Safety Information and Exposure Assessment Services

SAHTECH actively assists companies to implement comprehensive chemical management practices through in-depth recommendations and action plans for responsible production and safer chemical substance substitution. Contracted services were provided to numerous international chemical companies to comply with Taiwan's chemical regulatory requirements, such as chemical safety report (CSR) for the priority existing chemicals (PECs). Around 135 documents of CSR were officially approved by the Chemicals Administration, Ministry of Environment. Some local chemical export companies contracted SAHTECH to help them prepare the REACH-like-regulation documents for other countries and the international chemical treaties. Services also included chemical toxicity assessment and advanced chemical control banding for occupational mixtures' exposure.

A series of proprietary chemical exposure and health management software was widely used in manufacturing industry, construction industry, transportation sector, universities, financial holdings, and other service industry in 2023. Local firms also regularly received international regulations updates through SAHTECH e-message service.

Professional Societies Sponsorship

SAHTECH sponsored numerous technical conferences and professional activities with regards to occupational safety and health, fire protection, sustainable development, and green technology, such as those of Taiwan Occupational Hygiene Association, Taiwan Safety Council, Taiwan Chemical Industry Association, Taiwan Aerosol Research Association, Taiwan PM2.5 Monitoring and Control Association, Taiwan Super Critical Fluid Association, Taiwan Photo-catalyst Industrial Association, and Chemical Society Located in Taipei.

Seven distinguished students received SAHTECH scholarship to explore the field of OSH study and research in 2023. SAHTECH had 49 full-time employees and the revenue generated was around 5.5M USD, with 52% from industrial contract services.

SAHTECH looks to the future and more successful years ahead. As a responsible organization, SAHTECH will continue to advance and fully provide our expertise to promote SHE technologies, to help clients comply with international standards, to actively engage in professional SHE societies, and to serve as technical support to government agencies.

Photo Gallery

02.2023 APEC SOM I chemical dialogue meeting, Palm Spring, USA- Project Manager Eleen Lin (L1).

02.2023 Annual strategic planning meeting.

03.2023 Senior Engineer Chou-Wei Wu (R1) participated ChemCon meeting, New York, USA.

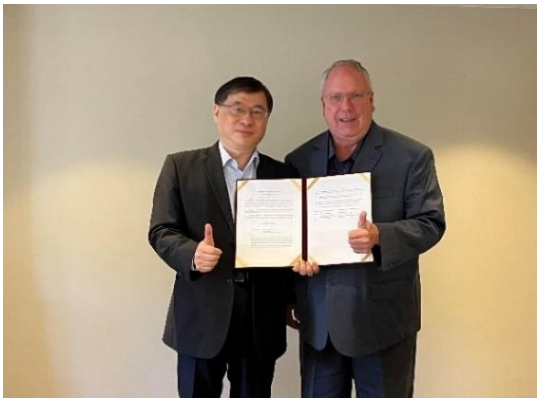
03.2023 Senior Project Manager Ching-Fong Lin (R4 of 1st row) conducted explosion-proof electrics installation workshop.

03.2023 Exposure hazard prevention visit for occupational carcinogenic chemicals- Engineer Jisin Chen (R1).

04.2023 Dr. Steve Lin visited ASA Finland to discuss Labor Carcinogens Registry.

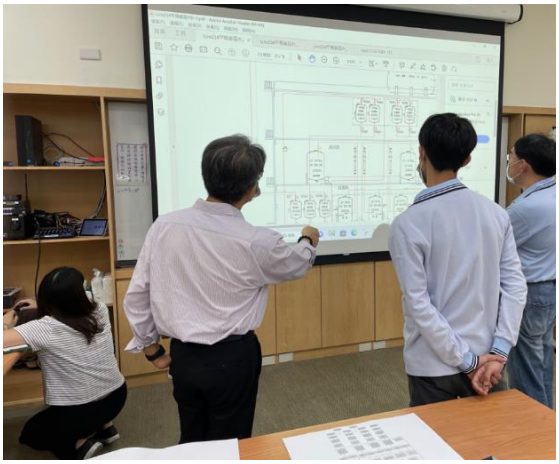
04.2023 President Dr. Jung-Pin Yu (L3) hosted SDGs forum at TOHA conference- Director Dr. Jowitt Li (R1).

04.2023 Vice President Dr. Cheng-Chang Huang delivered an invited speech at US semiconductor ESH conference.



04.2023 Vice President Dr. Cheng-Chang Huang signed an cooperation MOU for semiconductor ESH and fire protection services with PADRE chairman.

04.2023 National Workplace Safety and Health week- OSHA Deputy Director General Yu-Tang Lin (R3) and President Dr. Jung-Pin Yu (L1).



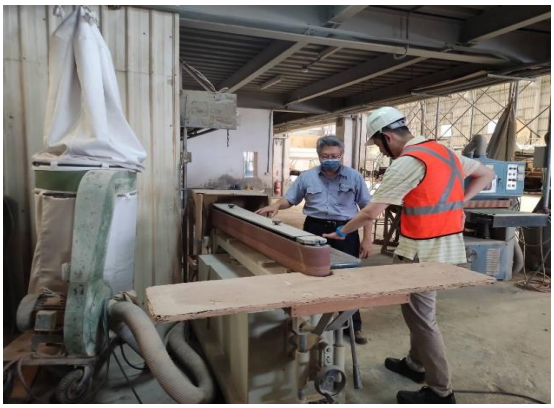
05.2023 Process diagram safety review training-Project Manager Jing-Kai Lin (L).

05.2023 Explosion-proof electrics safety assessment for a gas boiler room-Senior Engineer Yi-Lin Lu.

05.2023 Joint explosion-proof electrics safety training classroom opens- President Jung-Pin Yu (L1), Director General of ITRI Green Energy and Environment Laboratories (C), and President of Taiwan UL Solutions (R).

05.2023 President Jung-Pin Yu (C) hosted a healthy workforce and sustainable development forum at the 2nd Taiwan and Belgium labor policy and OSH seminar.

05.2023 Chairman Dr. Shuh Woei Yu delivered safety culture keynote speech at TOSHMS southern family meeting.



06.2023 Industrial ventilation assistance at a yacht facility- Specialist Chia-Han Chang (R).

06.2023 Chairman Dr. Shuh Woei Yu (L3 of 1st row) hosted TOSHMS northern family meeting.

07.2023 Changhua County Aboriginals OSH activities, Deputy County Magistrate Tianfu Lin (L3) and Project Manager Piting Chen (L2).

07.2023 PSM training for photovoltaic and semiconductor industries- Director Jui-Yu Lin.

08.2023 Dr. Jer-Pei Fong conducted tobacco chemical additives management seminar.

08.2023 APEC SOM III chemical dialogue meeting, Seattle, USA- Project Manager Cha-Chin Chen (R3).

08.2023 Vice President Dr. Cheng-Chang Huang (R of 1st row) conducted safety visit at a Taipower lithium energy storage station.

09.2023 Vietnam down jacket factory construction safety assistance- Project Manager Wei-Yee Liu (L) and Specialist Chia-Han Chang(R).

09.2023 Process safety assistance at a petrochemical plant.

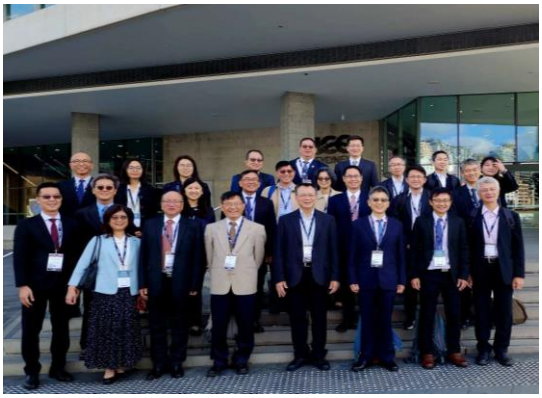
09.2023 Supply chain product chemical substance management and Japanese chemSHERPA tool briefing seminar-Director Dr. Jowitt Li (L3).

09.2023 Process safety assistance at a power plant-Senior Project Manager Fu-Ching Chang (L1).

10.2023 Internal auditor training of business continuity at Guangzhou complex of an electronic corp., Project Managers Jing-Kai Lin (R2 of 1st row) and Wei-Yee Liu (R3).

10.2023 System safety and collaborative robot safety seminar-Senior Engineer Chi-Wen Chiu.

10.2023 Safety protection training for pesticide application- Director Dr. Jowitt Li (R1) and Project Manager Cha-Chin Chen (L1).



11.2023 Taiwan delegation to the world congress on work safety and health-OSHA Director General Dr. Tzu-Lien Tzou (R4) and President Dr. Jung-Pin Yu (R5).

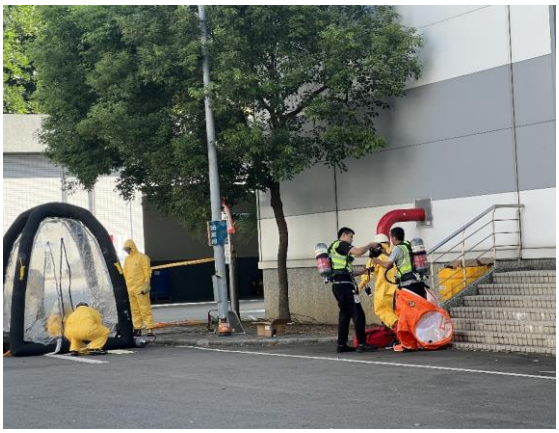
11.2023 Briefing session on the latest trends in chemical management in Japan and South Korea.

11.2023 OSHA conference on promoting sustainable health and safety in the workplace, assisted by SAHTECH.

11.2023 SAHTECH assisted MOL to conduct government agencies promoting OSH performance assessment and assistance.

11.2023 Korea KCMA, Japan NITE and SAHTECH tripartite exchange meeting on sound chemicals management.

2023.11 OSHA TOSHMS annual conference assisted by SAHTECH-OSHA Deputy Director General Yu-Tang Lin (R3) and President Dr. Jung-Pin Yu (R4).



11.2023 Comprehensive drill for fire and chemical disasters in an electronics factory.

2023.12 OSHA OSH annual conference assisted by SAHTECH- OSHA Director General Dr. Tzu-Lien Tzou (L4) and President Dr. Jung-Pin Yu (L3).

2023.12 Demo of intelligent technology applied in machinery injury prevention at OSHA OSH annual conference- Director Heng-Li Su (R1).

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