出國報告（出國類別：國際會議）

參加 APEC 2023 第一次資深官員會議
化學對話會議
(APEC 2023 SOM 1 CD)

服務機關：行政院環境保護署毒物及化學物質局
姓名職稱：吳春生科長、蕭寶桂特約高級環境技術師
派赴國家：美國加州棕櫚泉
出國期間：民國112年2月14日至2月20日
報告日期：民國112年5月19日

摘要

2023 年亞太經濟合作會議(Asia-Pacific Economic Cooperation, APEC)第一次資深官員會議(The First Senior Officials' Meeting, SOM 1)於美國加州棕櫚泉舉行，本次主要參與的三項會議， 2 月15 日的產業預備會議(Industry Pre-Meeting, IPM)、2月16日綠色化學與化學品無害管理工作坊，以及2月17日的化學對話會議(30th Chemical Dialogue, CD)。

APEC 成立於1989年，為一區域性經濟合作論壇，目前會員經濟體為21個，旨在提升亞太地區的地區性互助合作發展，加速區域整合，提供更為多元安全創新且穩定發展的經濟成長環境。

我國於1991年以「Chinese Taipei」加入 APEC，其為我國參加國際經濟合作重要的管道與平臺。設置於貿易暨投資委員會(Committee on Trade and Investment, CTI)下的CD，起源於2000年汶萊的部長級年會，經過與會成員對於設立由產官界代表組成的化學對話歡迎後而生。化學對話對於加強產業競爭力具有重要性，議題聚焦於探討亞太地區化學產業的非關稅措施、貿易便捷化、經濟與技術合作等，並就區域內加強產業競爭力及永續發展，提出建議。

整體而言，化學產業為跨領域產業，影響層面廣泛，2018年全球化學相關的 GDP 高達5.71兆美元，占 GDP 7.1%，全球與化學物質直接相關的勞動力約1,500萬人，間接雇用人數更是1.2億人。根據歐洲化學產業委員會(European Chemical Industry Council)統計，2021年全球化學品銷售規模為4兆0,260億歐元（折合新臺幣約132.97兆元），我國為760億歐元（折合新臺幣約2.51兆元），名列全球第八大，約占1.8%，創造出驚人化學產值，顯示我國與國際社會緊密連結。

行政院環境保護署毒物及化學物質局（以下簡稱化學局）於2016年12月28日成立，因應業務發展需求，自2020年起參與化學對話，藉由出席化學對話會議，掌握國際化學品發展及相關政策經驗，作為國內相關措施的推動參考。

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一、目的

我國於1991年以中華臺北，與中國大陸及香港同時加入 APEC，是參加國際經濟合作重要的管道與平臺。設置於貿易暨投資委員會下的化學對話，起源於2000年汶萊的部長級年會，與會成員對於設立由產官界代表組成的化學對話表示歡迎後，應運而生，化學對話對於加強產業競爭力具有重要性，議題聚焦於探討亞太地區化學產業的非關稅措施、貿易便捷化、經濟與技術合作等，並就區域內化學相關貿易便捷化、加強產業競爭力及永續發展，提出建議。

表 1　化學對話概況

項目	說明
起源	2000 年汶萊召開部長級年會
探討	探討亞太地區化學產業的非關稅措施、貿易便捷化、經濟與技術合作等相關議題
會議召開	一年兩次會議；通常在第一、三次資深官員會議期間召開（大約每年 2 月及 8 月）
組織架構	為 CTI 所屬次級論壇，並透過 CTI 適時向資深官員、部長及經濟領袖報告工作進展，相關內容亦將提供 ABAC 及其他相關次級論壇參考
組成	1. 論壇性質為公私對話，業界可參與論壇相關工作 2. 產業界代表於每次 CD 會前將召開業界預備會議(IPM)，並提出建議 3. IPM 主席由業界代表主席擔任
管理	1. 由產、官界各推派一名共同主席，任期兩年 2. 政府共同主席：美國貿易代表署；業界共同主席：智利業界代表
法定出席	14 個 APEC 會員（21 個 APEC 經濟體*2/3）；即每次化學對話會議至少需達 14 個經濟體代表出席的最低門檻

資料來源：化學對話職權範圍、自行彙整

APEC 為臺灣參與的重要國際性會議；APEC 的次級論壇-化學對話會議亦為連結政府部門以及產業界的重要平臺，根據《化學對話2020-2023年亞太區化學策略架構》化學對話有三大目標：

1. 擴大和支持該地區的法規合作和協調，促進貿易並提高化學物質的合理管理標準；

2. 促進化學產業作為永續經濟、環境與社會發展的創新方案提供者角色之認知；

3. 促進產業和政府之間的有效合作，以改善化學產品的管理和安全使用。

另一方面，由於毒性化學物質的減毒減量為我國化學局正在推動的重要措施，參與化學對話汲取各國產官學界的化學物質管理經驗，有其必要性。積極參與 APEC 會議主要有以下目標：

1. 掌握國際間最新化學物質管理政策、發展及趨勢。

2. 向國際傳遞我國化學物質管理作法。

3. 接軌國際建立化學管理利害關係人網絡。

4. 促進養成我國化學相關之國際人才。

化學局自2020年起，出席化學對話會議，藉由會議的參與，逐步掌握化學對話探討議題，後續將持續出席會議，並深化於國際場域的量能。

資料來源：自行彙整

圖1　化學局參與化學對話路徑

二、行程

本次出國時間共七日，行程如下：

表 2　美國加州 2023 年 APEC 化學對話行程表

日期	地點	行程
2/14（二）	臺北/美國加州	BR18，UA5705 搭機啟程
2/15（三）	美國加州	出席 2023 APEC 第一次資深官員會議(Senior Official Meeting)的化學對話會議(Chemical Dialogue, CD)產業預備會議(Industry Pre-Meeting, IPM)
2/16(四）	美國加州	出席由美國環保署主辦的綠色化學與化學品無害管理工作坊，由吳春生科長專題報告「綠色化學策略與經驗 Green Chemistry Strategies and Implementation Experiences 」
2/17（五）	美國加州	出席 2023 APEC 第一次資深官員會議的第 30 屆化學對話全體會議(Chemical Dialogue Plenary Meeting)
2/18（六）	美國加州/臺北	UA2070，BR17 搭機返臺
2/19（日）		
2/20（一）		

資料來源：自行彙整

（一） 2023 年關注重點

2023年 APEC 主辦國為美國，主題為「為各方創造具韌性及永續的未來」(Creating a Resilient and Sustainable Future for All)，並將聚焦相互連結(Interconnected)、創新(Innovative)及包容(Inclusive)等三大優先議題。

表 3　APEC 2023 年主辦國-美國主題

主題	說明（原文）	說明（中文）
相互連結	**1 INTERCONNECTED** ***Building a resilient and interconnected region that advances broad-based economic prosperity.*** 1. Strengthening supply chain resilience 2. Enhancing services trade 3. Promoting digital trade 4. Restarting cross-border travel 5. Enhancing infrastructure and transportation networks 6. Strengthening health systems 7. Implementation of the FTAAP Agenda Workplan 8. Support for the WTO	建構有彈性和相互連結的地區，以促進廣泛的經濟繁榮 1. 加強供應鏈彈性 2. 加強服務貿易 3. 促進數位貿易 4. 重啟跨境旅行 5. 加強基礎設施和交通網絡 6. 加強衛生系統 7. 亞洲太平洋自由貿易區(Free Trade Area of the Asia-Pacific, FTAAP)議程工作計劃的實施 8. 支持世貿組織
創新	**2 INNOVATIVE** ***Enabling an innovative environment for a sustainable future.*** 1. Enhancing climate mitigation and resilience 2. Reducing disaster risk and improving emergency preparedness and response 3. Promoting the digital economy and enhancing digitization 4. Promoting food security, food safety, and agricultural biotechnology 5. Tackling environmental challenges 6. Fostering an enabling environment	為永續發展的未來，創造創新環境 1. 加強氣候調適和復原力 2. 減少災害風險並增加災害應變 3. 推動數位經濟，提升數位水準 4. 促進食品安全、食品安全和農業生物技術 5. 因應環境挑戰 6. 創造有利環境
包容	**3 INCLUSIVE** ***Affirming an equitable and inclusive future for all.*** 1. Advancing gender equity 2. Strengthening SMEs 3. Addressing inclusion in trade 4. Expanding economic potential and opportunity through investments in infrastructure and workers 5. Elevating workers' voices 6. Engaging historically underserved and underrepresented segments of the population	確認所有人獲得公平和包容的未來 1. 促進性別平等 2. 加強中小企業 3. 解決貿易包容性問題 4. 透過對基礎設施和勞動力的投資擴大經濟潛力和機會 5. 提高勞動力的聲量 6. 致力於長期處於弱勢的人口

資料來源：截圖自第 30 屆化學對話簡報、自行彙整

2023年APEC第一次資深官員會議期間為2023年2月14日至28日期間召開，2023年第一次化學對話會議（第30屆化學對話）為2月15日及2月17日，為新冠疫情後，再次以全實體會議方式舉辦。

表 4　APEC 2023 年行事曆

DATES	VENUE	MEETING
December 7-9	Honolulu, Hawaii	• **Informal Senior Officials' Meeting (ISOM)**
February 14-28, 2023	Palm Springs, California	• **First Senior Officials' Meeting and Related Meetings (SOM1)** • Finance and Central Bank Deputies' Meeting (FCBDM)
May 14-26, 2023	Detroit, Michigan	• **Second Senior Officials' Meeting and Related Meetings (SOM2)** • Transportation Ministers' Meeting (TMM) • Ministers Responsible for Trade (MRT) Meeting
July 29-August 21, 2023	Seattle, Washington	• **Third Senior Officials' Meeting and Related Meetings (SOM3)** • Senior Finance Officials' Meeting (SFOM) • Senior Disaster Management Officials' Forum (SDMOF) • SME Ministerial Meeting • Women and the Economy Forum (WEF) • Energy Ministers' Meeting (EMM) • Food Security Ministers' Meeting (FSMM) • High-level Meeting on Health and the Economy (HLMHE)
November, 2023	San Francisco, California	• Finance Ministers' Meeting (FMM) • **APEC Economic Leaders' Week (AELW)**

日期	地點	會議
2022.12.07-12.09	夏威夷州檀香山	非正式資深官員會議（ISOM）
2023.02.14-02.28	加州棕櫚泉	第一次資深官員會議（SOM1） 財政次長暨央行副總裁會議（FCBDM）
2023.05.14-05.26	密西根州底特律	第二次資深官員會議（SOM2） 交通部長會議（TMM） 貿易部長會議（MRT）
2023.07.29-08.21	華盛頓州西雅圖	第三次資深官員會議（SOM3） 資深財金官員會議（SFOM） 災害管理資深官員論壇（SDMOF） SME 部長會議 婦女與經濟論壇（WEF） 能源部長會議（EMM） 糧食安全部長會議（FSMM） 衛生與經濟高階會議（HLMHE）
2023.11	加州舊金山	財政部長會議（FMM） APEC 經濟領袖周（AELW）

資料來源：第 30 屆化學對話簡報、本代表團彙整

（二） 2 月 15 日產業預備會議

1. 背景：於化學對話全體會議前，召集各經濟體的產業代表，探討產業現況、挑戰，以及就產業於後續全體會議，擬提出的政策建議及策略方向，先行凝聚共識。

2. 出席：智利、南韓、墨西哥、美國，以及我國代表團，計五個經濟體、目測約30~40人參與。

3. 討論：此次聚焦在供應鏈、全球化學品統一分類標示系統 (Globally Harmonized System of Classification and Labelling of Chemicals, GHS)，以及聯合國 SAICM 目標 (The Strategic Approach to International Chemicals Management, SAICM)。

4. 我國參與情形：我國發言提及，由於全球減排趨勢，綠色供應鏈亦是我國推動產業轉型的重要方向。

（三） 2 月 16 日綠色化學與化學品無害管理工作坊

1. 背景：為美國執行由 APEC 補助經費的提案—綠色化學與化學品無害管理 (Green Chemistry and Sound Chemicals Management)，並舉辦工作坊。

2. 形式：實體與線上混合會議。

3. 議程：全天，9時至16時45分。

4. 出席經濟體：加拿大、南韓、墨西哥、美國，以及我國代表團等經濟體代表出席；實體約30人、線上約15人。

5. 講者：美國、加拿大政府代表、美國產業代表，此外，亦邀請聯合國環境規劃署(UNEP)分別擔任工作坊主持人以及講者。

6. 我國參與情形：行政院環境保護署毒物及化學物質局吳春生科長，以及財團法人中華經濟研究院綠色經濟研究中心林俊旭副主任，於下午時段，分別發表30分鐘的專題演講，並於專題演講後，與所有講者共同參與綜合座談。

（1）吳春生科長以「綠色化學策略與執行經驗」(Green Chemistry Strategies and Implementation Experiences)為題，說明我國環保署化學局在推動綠色化學的做法，以及介紹我國所使用的政策工具。以下簡要說明內容（詳見**附錄二**）：

I. 策略：說明我國環保署化學局參考聯合國 SAICM，以及連結聯合國於 2015 年發布的永續發展目標 SDGs、綠色化學 12 項原則等，做為建構我國綠色化學和國家化學物質管理政策的基礎，當中涵蓋 23 項推動策略、101 項具體執行措施，並劃分為跨部合作、建立知能、產業導入，以及國際交流等四個方向。

II. 執行：目前積極推動的綠色化學相關工作

i. 綠色化學應用與創新獎：已舉辦三屆，累積報名家數逾百件。

ii. 產業訪視輔導：為促進綠色化學業界推動經驗交流，篩選出 15 家進行訪視輔導，透過訪視輔導，達到創造有利於綠色轉型的環境與氛圍、建立減量去毒、安全替代的基礎資訊，以及加速落實綠色轉型等成效。

iii. 資訊整合平臺（化學雲）：化學物質管理依化學物質種類、應用等分屬不同部會業管權責，因此，如何藉由化學雲，進行跨部會整合、共享，以提升行政效率也是化學雲建置執行的最大效益。

iv. 搜尋、評估及篩選系統：搜尋、評估及篩選系統（Searching, Assessment & Screening System，以下簡稱 SAS 系統）是化學局刻正開發的系統，透過大數據和人工智慧以評估化學物質的危害性，為高風險化學品尋找安全替代方案。在安全替代方面，為了提供危害評估、整體風險，化學局建構 SAS 系統，預期開發完成後，將有助於國內產業推動綠色化學或永續化學。

III. 結論：整體而言，綠色化學已納入我國國家化學物質管理政策綱領，作為各部會從源頭管理化學物質之行政指導依據；目前鼓勵產業導

入綠色化學理念、將 ESG 元素納入考量，並已建立訪視輔導及舉辦創新應用獎機制；此外，為提升跨部會行政管理效率，已建立化學雲，透過資訊化及人工智慧等技術，快速查詢廠商及化學物質資訊，篩選可疑廠商及統計資料。

（2）綜合座談的問答時段，各經濟體極關心美國及我國政府部門推動綠色化學面臨的挑戰及阻礙，特別是針對安全替代的化學物質建議部分。

（四） 2 月 17 日化學對話全體會議

1. 背景：第30屆化學對話會議。

2. 出席：智利、南韓、墨西哥、美國，以及我國代表團等，計五個經濟體、目測約40人參與。

3. 主席開場：此次僅五個經濟體出席，鼓勵各經濟體於2023年8月的第31屆化學對話踴躍出席，如果連續兩屆未達出席門檻（14個經濟體），化學對話日後恐面臨落日檢討。

表 5　歷屆化學對話經濟體出席概況

年度	屆次	主辦國	出席經濟體數
2018	20	巴布亞紐幾內亞	13
2018	21	巴布亞紐幾內亞	12
2019	22	智利	15
2019	23	智利	14
2020	24	馬來西亞	17
2020	25	馬來西亞	17
2021	26	紐西蘭	17
2021	27	紐西蘭	17
2022	28	泰國	18
2022	29	泰國	17
2023	30	美國	5

資料來源：第 30 屆化學對話簡報，自行彙整

4. 主辦國說明今年的主題和優先事項：2023年主題是為各方創造具韌性及永續的未來；優先事項是相互連結、創新、包容。

5. APEC 秘書處：自2021年9月至2022年10月，各經濟體共計105件提案完成，是前一年度的2.6倍，主因是先前爆發 COVID-19，致提案執行延遲所致；如以優先事項區分，近四成(39%)是聚焦永續性成長、37%聚焦包容性成長、貿易與投資約20%。官方主席亦補充，2022年提案獲准率為75%，鼓勵各經濟體踴躍提案，將想法付諸實踐。

6. 法規合作：智利、美國及我國，計三個經濟體，進行法規更新說明。我國由化學局吳春生科長代表說三大類更新，分別為：(1)強化關注化學物質的管理；(2)標示與安全資料表；(3)環境用藥。

7. 全球化學品統一分類標示系統(GHS)：我國勞動部代表說明 G.R.E.A.T.網站，已逾50萬人次瀏覽；並持續維護該網站，今年並經由 APEC 廣發文宣，推廣該網站；化學對話主席亦表達對我國的感謝。

8. 資訊交換：我國勞動部代表代替資訊交換小組說明其互動指南、辦理線上研討會情形，以及有關聯合國 GHS 的相關資訊。

9. 海洋廢棄物及永續性：我國海委會代表說明今年提案的進度，以及相關時程規劃。

三、心得與建議

（一） 心得

1. 經濟體出席數不如預期 留意後續出席

此屆化學對話為疫情趨緩後的第一次全實體會議，經濟體出席數只有5個頗不理想，為化學對話近五年（2018-2023年）以來，出席數最低者；近五年出席數前次最低為第21屆 (2018)的12個經濟體。

因此，政府共同主席及業界共同主席多次表達，鼓勵經濟體踴躍出席8月於西雅圖的會議。初步分析本次經濟體出席率較低的原因，可能在於部分經濟體持觀望態度，期待比照去年的 APEC 會議召開模式（實體和線上會議並行），以至於全實體會議時未能及時安排，造成出席不踴躍。

由於化學對話在設置之初，即訂定法定出席門檻，每屆會議至少三分之二的經濟體出席（即21個經濟體的三分之二為至少14個經濟體出席）；如果連續兩屆未達14個門檻，日後將檢討化學對話存續與否。

2. 特定化學物質管理議題 可與美國實質交流

儘管承上所述，本次於2023年2月召開的實體會議，化學對話的經濟體出席狀況不盡理想，本次出席率偏低的情形下，對我國來說，未必全以負面看待此現況；雖然 APEC 為一共識決的組織，但美國有極高的主導性，增加與其互動相當重要，且美國為2023年 APEC 主辦國，我國反而藉由此屆會議期間，促進與美國的深度交流，特別是與環保署化學局業務與關係密切的美國環保署及貿易代表署。

以此次會議來說，2月16日綠色化學與化學品無害管理工作坊，本團隊主動參與兩個時段（每個時段約30分鐘）的簡報，並分別從政府政策，以及從非政府組織（NGO）等不同角度，分享推動綠色化學的經驗；根據本代表團於會議期間的互動及觀察，感受到美國環保署以及貿易代表署代表對我方的善意，例如：擔任化學對話的政府共同主席 Kent C. SHIGETOMI、環保署的會議主辦人員 Ashley NELSON 等人，無論是化學

物質相關或是會後寒暄等，對本代表團頻頻表示友好。

由於我國於簡報展示的綠色化學政策與執行工具，十分多元，會議中，與會成員十分關心我國在推動綠色化學所面臨的挑戰，化學局吳春生科長從安全、法規等不同面向，說明我國推動時的挑戰。

此外，如以特定議題為例，我國刻正建置 SAS 系統，相關資料來自美國環保署等全球37個的資料庫，因此，建置期間透過與各經濟體的高密度交流，有助於我國 SAS 系統中資訊的擴大與精進。

另一方面，我國目前有「綠色化學應用與創新獎」，目前已邁入第三屆，表彰於綠色化學具有貢獻的企業；美國則有總統綠色化學挑戰獎（Presidential Green Chemistry Challenge Award），為化學學術界重量級的獎項之一。因此，日後雙方在相關經驗，或可進一步交流。

3. 向發展中國家 輸出我國優勢

化學局為為配合新南向政策，自106年起，即委託雲林科技大學等辦理試辦計畫，藉由教育體系及政府單位向越南相關單位推廣，其後，南區毒化災專業訓練中心於2021年下半年落成啟用。

由於該中心可提供政府、業界、學校及民眾相關應變人員專業訓練使用，強化毒性化學物質運輸的安全與災害應變能力，避免災害擴大及減少傷亡與損失，為我國可優勢輸出的項目。

因此，如能透過 APEC 化學對話的管道，申請相關提案或推廣宣傳，開設國際班，辦理毒化災應變訓練，邀請新南向國家，進而促進國際友好及技術交流，增進我國與國際各國間應變技術組織或單位合作機會，推廣國際常用指揮架構，於大型災害搶救時各國救災人員指揮架構配合，可望搭建區域性化學災害應變技術的整合平臺。

整體而言，根據近年參與化學對話的經驗，儘管存有挑戰，例如出席不盡踴躍，但經由此時機，亦是我國代表可於會議中擴大影響力的最佳時機，因此，如經由實質政策交流，加深與化學對話主要參與經濟體的互動，

有助於我國中長期的化學產官學的國際能見度。

資料來源：自行彙整

圖2　化學局參與化學對話的機會、挑戰與策略

（二） 建議

1. 各種國際場合 加強推廣我國永續化學作為

APEC 跟進世界各國宣示或規劃淨零腳步，2023 年主辦國美國定調的主題為「為各方創造具韌性及永續的未來」，並將聚焦相互連結、創新及包容等三大優先議題。

因此，近期如參與國際場合，如 APEC 或其他國際研討會、論壇等，皆可參酌相關主軸，與國際間關注的永續議題增加連結，多加推廣化學局於綠色化學或永續化學的政策方向或實務經驗分享。

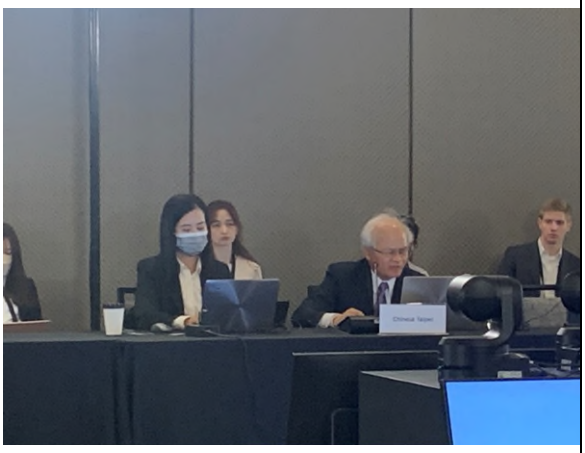
2. 促進國際人才養成

APEC 雖為一政治性組織，相關會議進行的議事規則，亦須遵守，惟由於發言開放，且多數發言於會前可有充足的時間準備，因此，適合產官學代表共同參與，有助於我國國際人才的養成。

四、附錄

（一） 參與會議實錄

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>我代表團與化學對話業界共同主席 Sergio BARRIENTOS H.（右三）合影。</td><td>我代表團與化學對話政府共同主席 Kent C. SHIGETOMI（左四）合影。</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>化學局吳春生科長（左上角於講臺後站立者）綠色化學與化學品無害管理工作坊進行簡報。</td><td>化學局吳春生科長（右）與中經院林俊旭主任（左）與綠色化學與化學品無害管理工作坊主持人、來自聯合國環境規劃署 Hilary FRENCH（中）於會後合影。</td></tr>
</table>

	
化學局吳春生科長（右四）和中經院林俊旭主任（左二）與四名講者，共同參與綜合座談，與出席來賓互動。	我代表團出席化學對話產業預備會議。
	
我代表團出席化學對話全體會議。	化學局吳春生科長（中）於全體會議進行法規更新報告。

The Asia-Pacific Economic Cooperation - Chemical Dialogue's Green Chemistry Workshop

Ashley Nelsen
Senior Trade Advisor at the United States Environmental Protection Agency

1 article ✓ Following

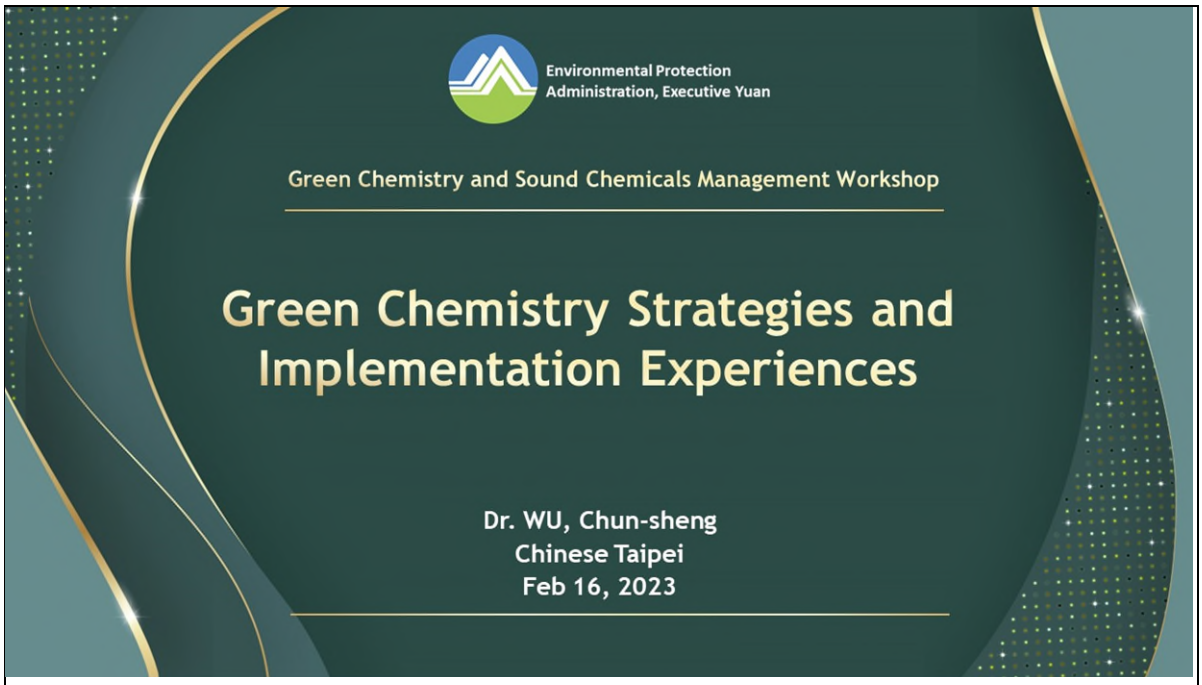
March 28, 2023

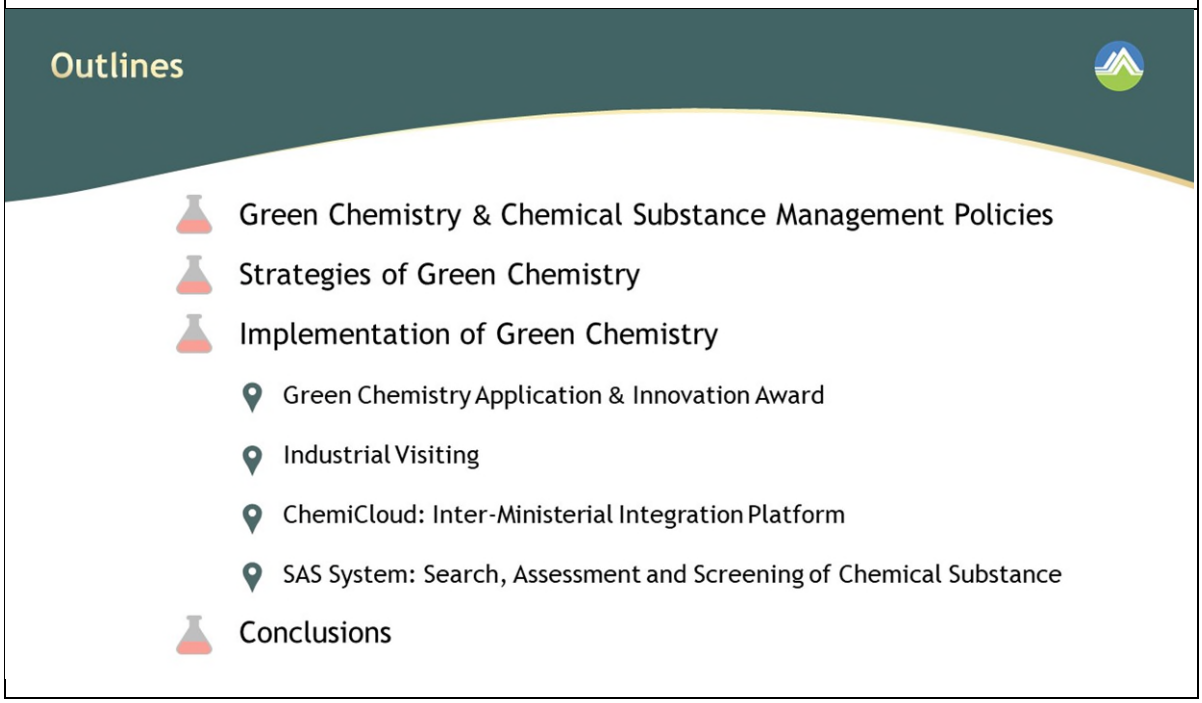
Are you and your community ready for extreme heat? Read the National Security Council's blog called Preparing our Nation to Beat the Heat to learn more about what federal agencies are doing to help communities prepare.

美國環保署會後將工作坊成果，發布文章於 LinkedIn。

資料來源：截圖

（二） 2 月 16 日「綠色化學策略與執行經驗」簡報





1

Green Chemistry & Chemical Substance Management Policies

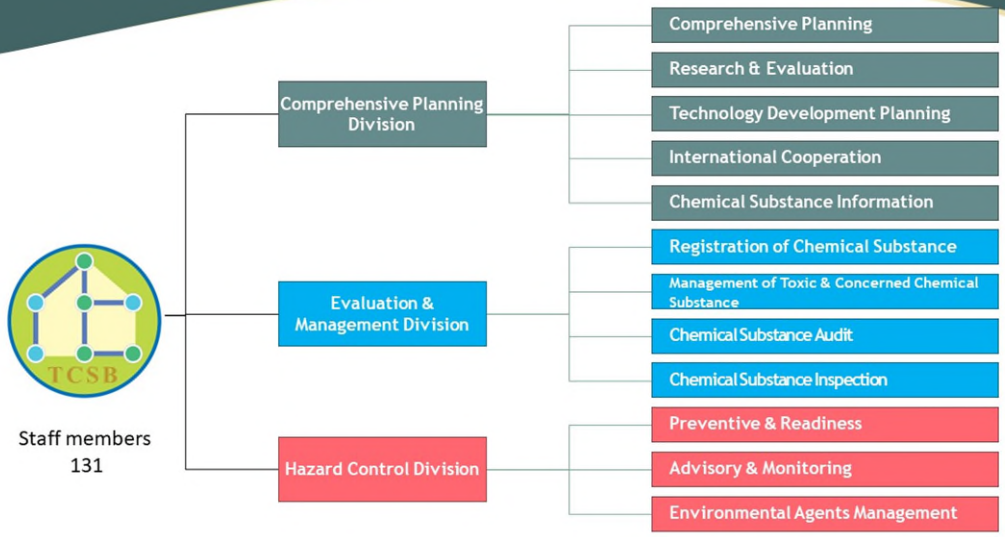
About TCSB

行政院環境保護署
毒物及化學物質局
Toxic and Chemical Substances Bureau
Environmental Protection Administration
Executive Yuan

TCSB, EPA was established in 2016 to effectively manage chemical substances and build a healthy and sustainable environment

4

Organization of TCSB



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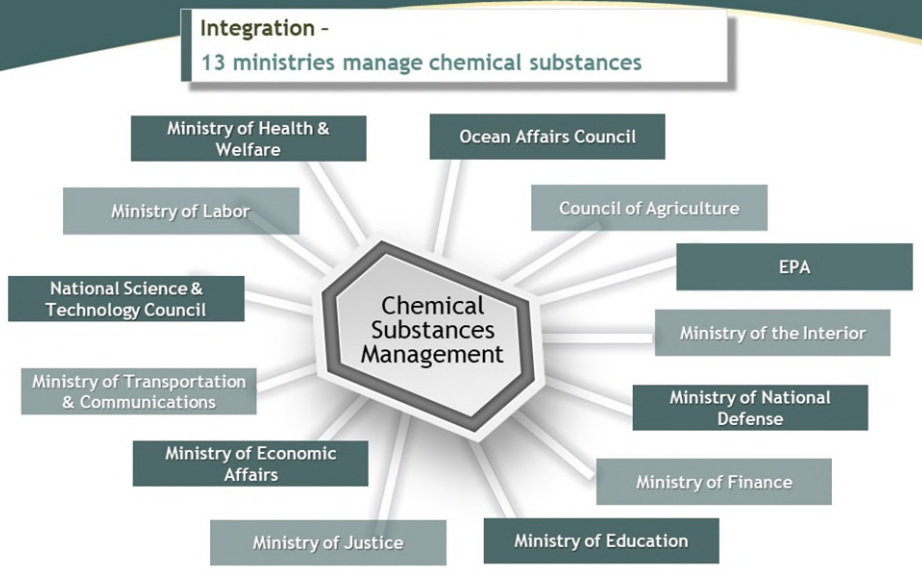
Inter-Ministerial Chemical Management



6

Establishment of Chemical Substance Management Guidelines

Reference UN SAICM (adopted in 2006)

Link UN SDGs (released in 2015)

SUSTAINABLE DEVELOPMENT GOALS

- 3 GOOD HEALTH AND WELL-BEING — Ensure healthy lives & promote well-being for all at all ages
- 6 CLEAN WATER AND SANITATION — Ensure access to water & sanitation for all
- 12 RESPONSIBLE CONSUMPTION AND PRODUCTION — Ensure sustainable consumption & production patterns

Establishment of "Chemical Substance Management Policy Guidelines"

7

Green Chemistry & National Chemical Substance Management Policies

- 23 promotion strategies
- 101 specific implementation measures

Goals

Governance	Risk Reduction	Capacity	Knowledge & Information	Illegal International Traffic
System 5	Control measures 13	Information integration 5	Social responsibili 3	International convention 5
Regulation 6	Green chemistry 5	Login system 3	Community inform 6	Trafficking measures 3
Plan 2	Circular economy 3	Inspection check 3	Education 5	Cross-border transpor 5
Report 1	Risk assessment 3	Emerging pollution survey 1	Civil participation 2	Trade environmental coordination 4
Finance 4	Incident response 12			International exchang 2
18	36	12	16	19

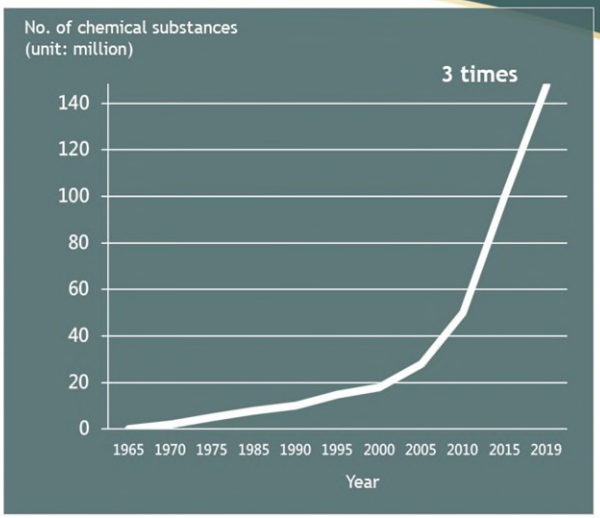
8

2 Strategies of Green Chemistry

Trends: Complicated & Ever-Changing

- According to the Chemical Abstracts Service (CAS), the number of chemical substances increased in the last 10 years has doubled compared with the accumulated quantity in the past 50 years (>200 million chemical substances with CAS number)
- There are currently more than 100,000 existing chemical substance lists compiled and established, and more than 20,000 circulating substances; more than 5,000 new chemical substances have been registered

Utilizing the concept of green chemistry to reduce risks from the source



10

12 Principles of Green Chemistry

P: Prevent wastes
R: Renewable materials
O: Omit derivatization steps
D: Degradable chemical products
U: Use safe synthetic methods
C: Catalytic reagents
T: Temperature, Pressure ambient
I: In-Process Monitoring
V: Very few auxiliary substances
E: E-factor, maximize feed in product
L: Low toxicity of chemical products
Y: Yes, it's safe

PRODUCTIVELY

John Warner
2019 Aug 23

Paul Anastas
2018 Jun 19

11

Strategies of Green Chemistry

Inter-ministerial cooperation

- Inter-ministerial consensus camp
- Inter-ministerial cooperation for student creative competition, industry training camp
- Collaborative promotion program

Knowledge building

- School-promoted education programs
- Teacher seed training camps and workshops
- Safe alternative information platform

International exchange

- Search and research of international information
- Compliance with the international chemical substances management convention
- Establishment of communication channels

Industry introduction

- Safe alternatives checklist
- Safe alternatives awareness brochure
- Safe alternative assessment process
- Assessment of industry benefits

12

Encourage the Industry to Introduce the Concept of Green Chemistry to Reduce Risks

Source: utilize raw materials and energy, find out safe alternatives, and reduce the release of harmful substances

Process: improve efficiency and reduce consumption, derivatives and waste

Reduce Risks over the Lifecycle of Chemical Substances

13

3 Implementation of Green Chemistry

3

Implementation of Green Chemistry –

Green Chemistry Application & Innovation Award

Green Chemistry Application & Innovation Award

- **Encourage** all to engage in the research to develop of safe alternatives with low-pollution and low-toxicity alternatives, to reduce the use of toxic chemicals, to strengthen hazard prevention management and emergency disaster capabilities
- Basis: Article 72 of the "Toxic and Concerned Chemical Substances Control Act" and "Toxic and Concerned Chemicals Material Operation Incentive Measures"
- Targets : **Enterprises, high schools above and research institutions**

Online Awards Ceremony

16

Green Chemistry Application and Innovation Award

- 1st Award (2018) - participants: 37; award winners: 15 groups
- 2nd Award (2020) - participants: 63; ; award winners: 14 groups
- 3rd Award (2022) - participants: 46 (in review)

Green Safe Alternative

- Safe substitution of raw materials
- Non-toxic process: alanine instead of boric acid, no strong acid or alkali in the process

Green Chemistry Education

- Training or experience sharing regarding chemical management for students

Chemical Substance Management

- Development of chemical substance management database
- Regular review of company chemical substance management

Disaster prevention & preparation

- Introduction of emergency response system APP, medical resource integration and injury classification system
- Establishment of disaster relief command and equipment vehicles
- Disaster drills and publicity

17

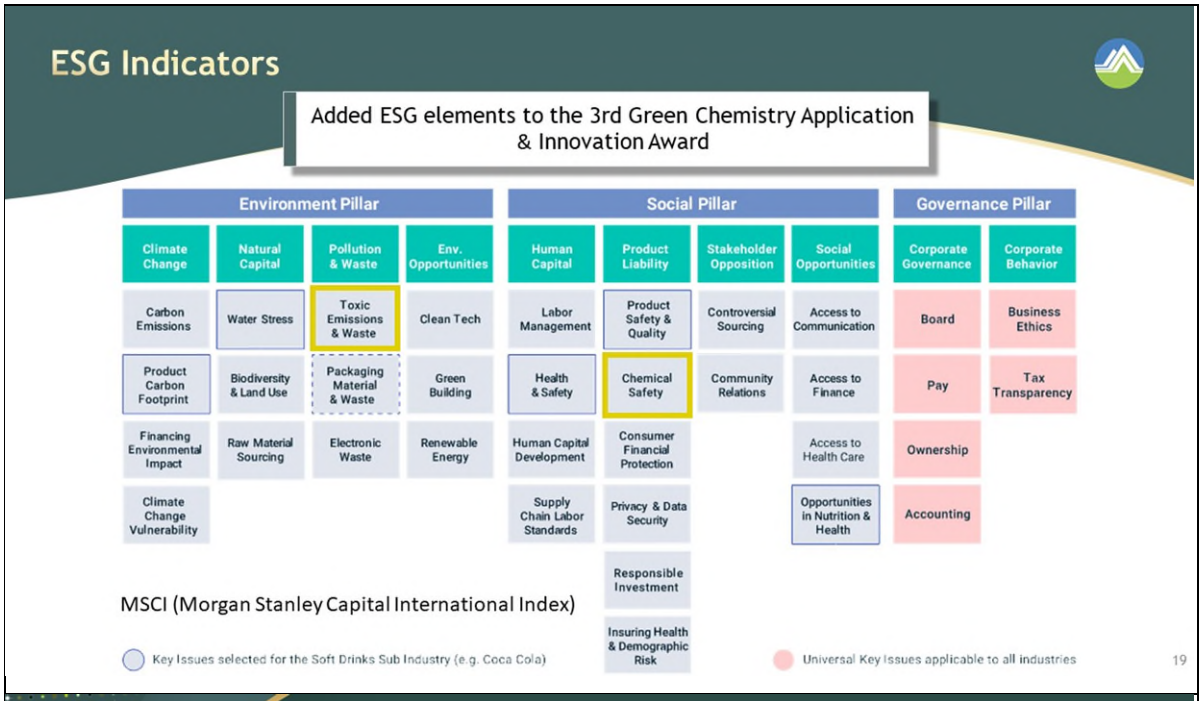
Introduction of ESG

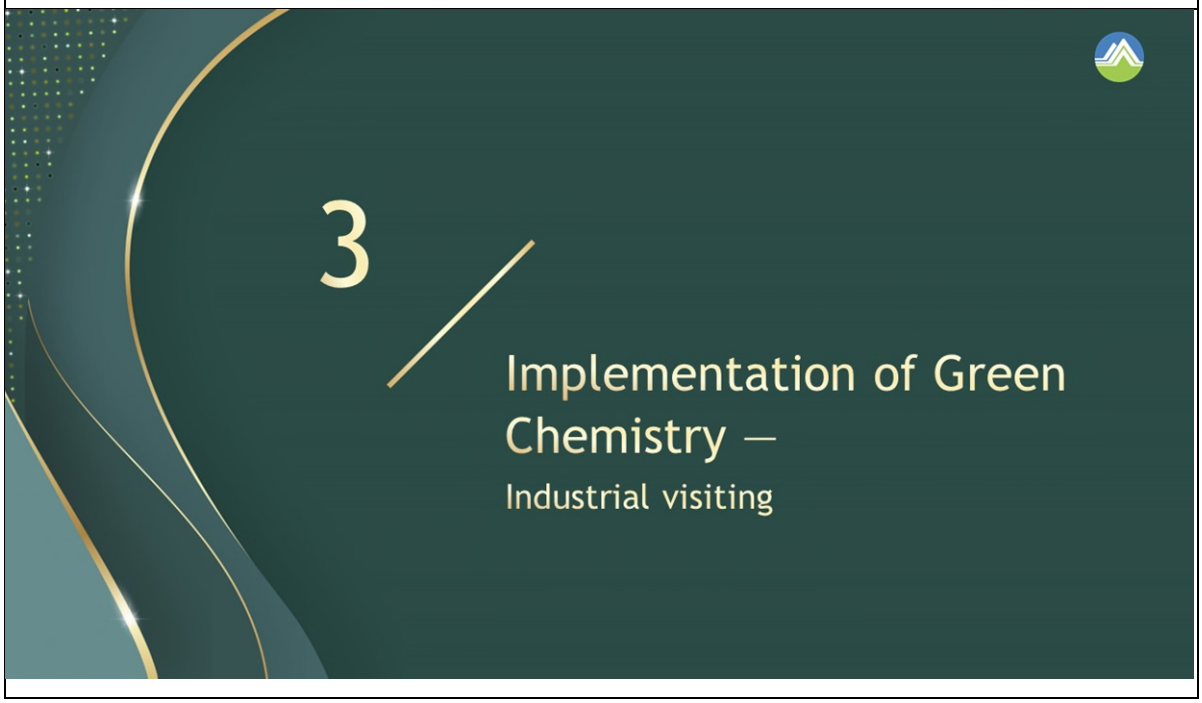
Chemical Substance Management & ESG
(Environmental, Social and Corporate)

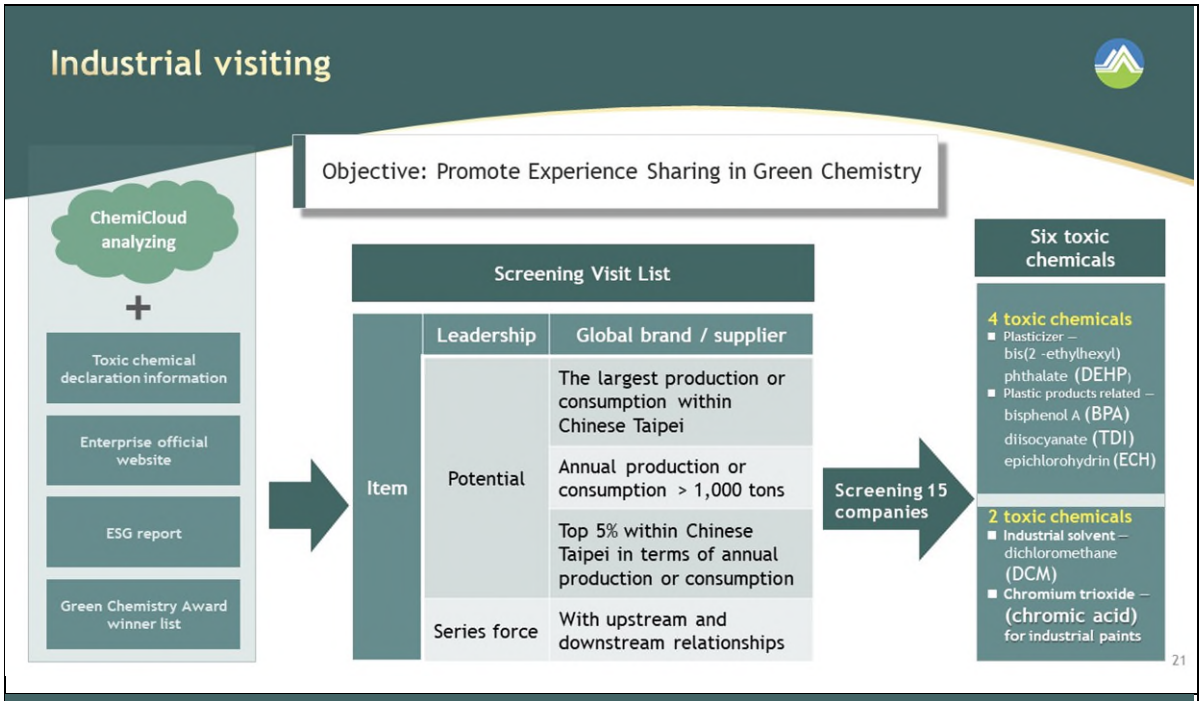
Environmental Sustainability + Industrial Sustainability

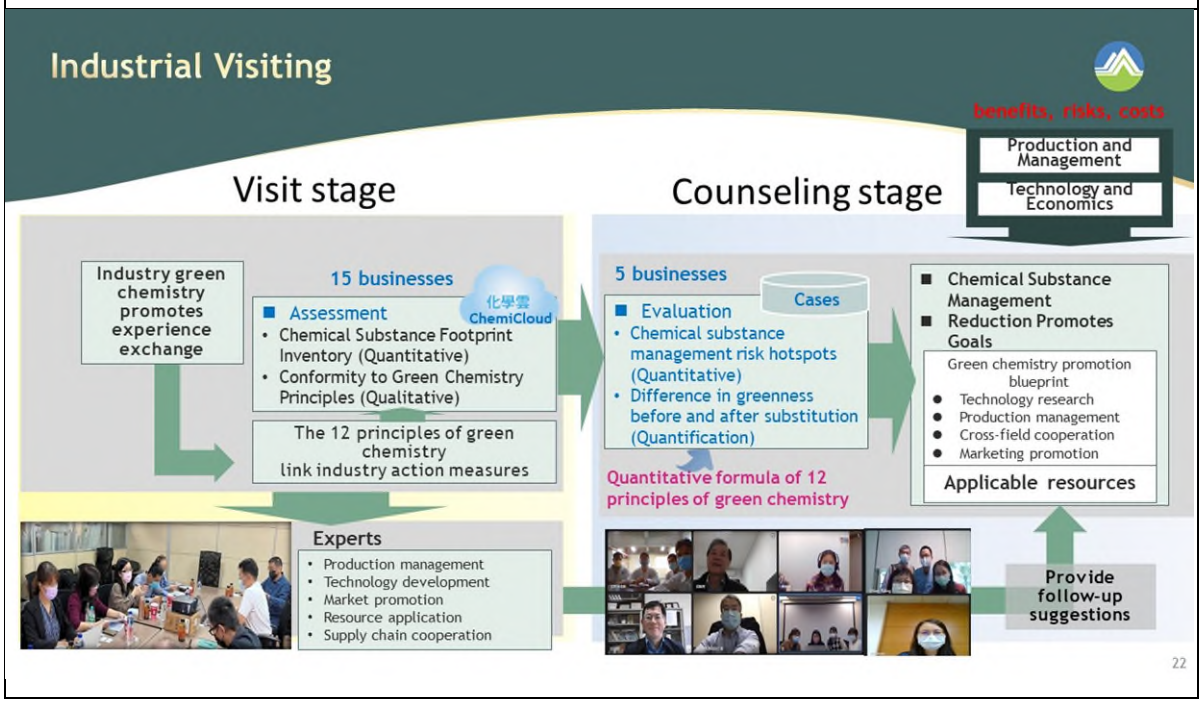
Source: Community First Foundation

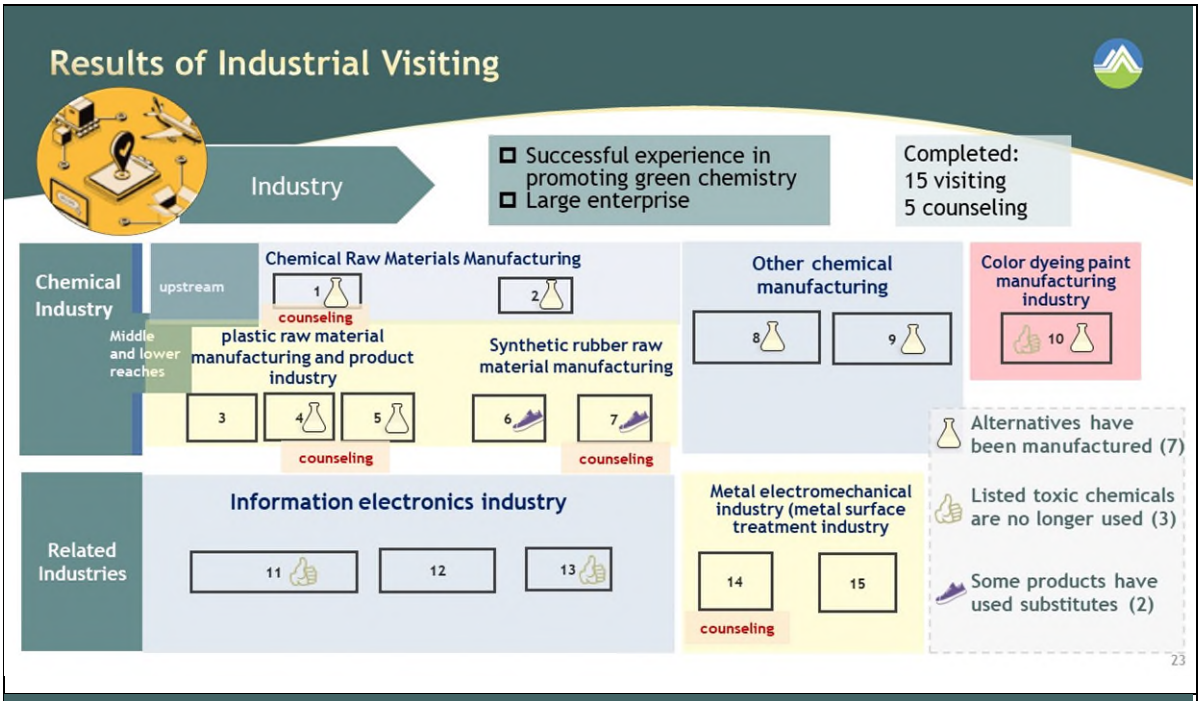
18

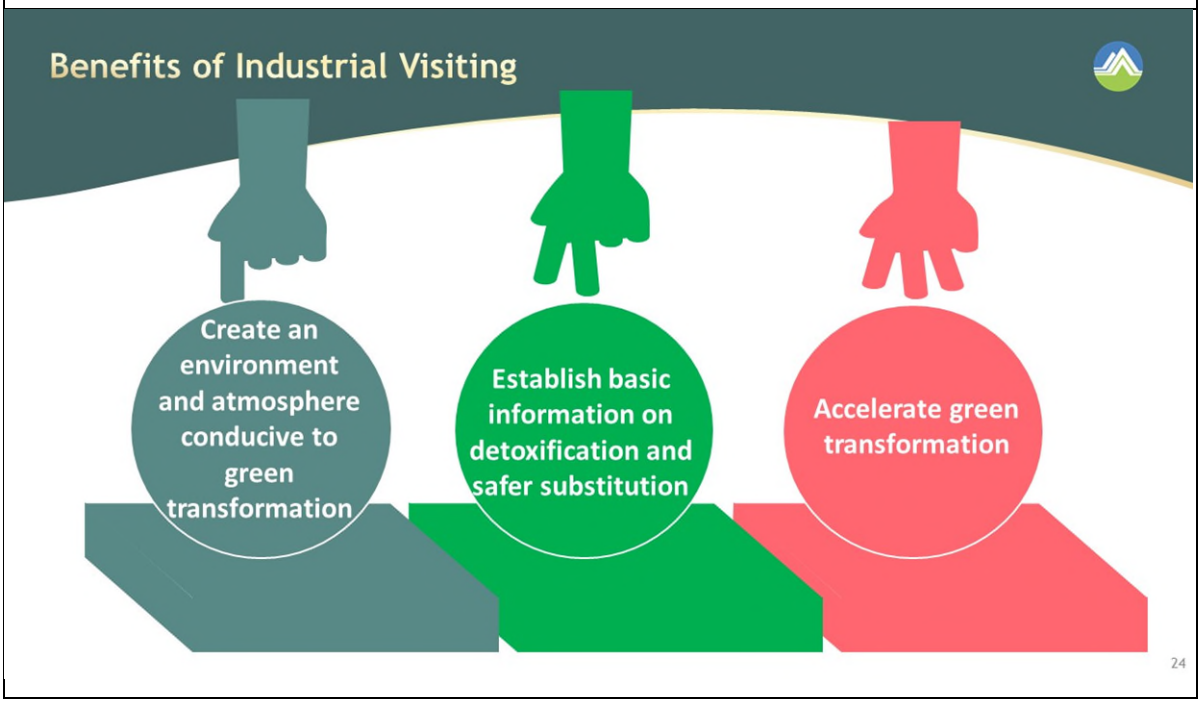

ESG Indicators
Added ESG elements to the 3rd Green Chemistry Application & Innovation Award
Environment Pillar
Social Pillar
Governance Pillar
Climate Change
Natural Capital
Pollution & Waste
Env. Opportunities
Human Capital
Product Liability
Stakeholder Opposition
Social Opportunities
Corporate Governance
Corporate Behavior
Carbon Emissions
Water Stress
Toxic Emissions & Waste
Clean Tech
Labor Management
Product Safety & Quality
Controversial Sourcing
Access to Communication
Board
Business Ethics
Product Carbon Footprint
Biodiversity & Land Use
Packaging Material & Waste
Green Building
Health & Safety
Chemical Safety
Community Relations
Access to Finance
Pay
Tax Transparency
Financing Environmental Impact
Raw Material Sourcing
Electronic Waste
Renewable Energy
Human Capital Development
Consumer Financial Protection
Access to Health Care
Ownership
Climate Change Vulnerability
Supply Chain Labor Standards
Privacy & Data Security
Opportunities in Nutrition & Health
Accounting
Responsible Investment
Insuring Health & Demographic Risk
MSCI (Morgan Stanley Capital International Index)
Key Issues selected for the Soft Drinks Sub Industry (e.g. Coca Cola)
Universal Key Issues applicable to all industries
19

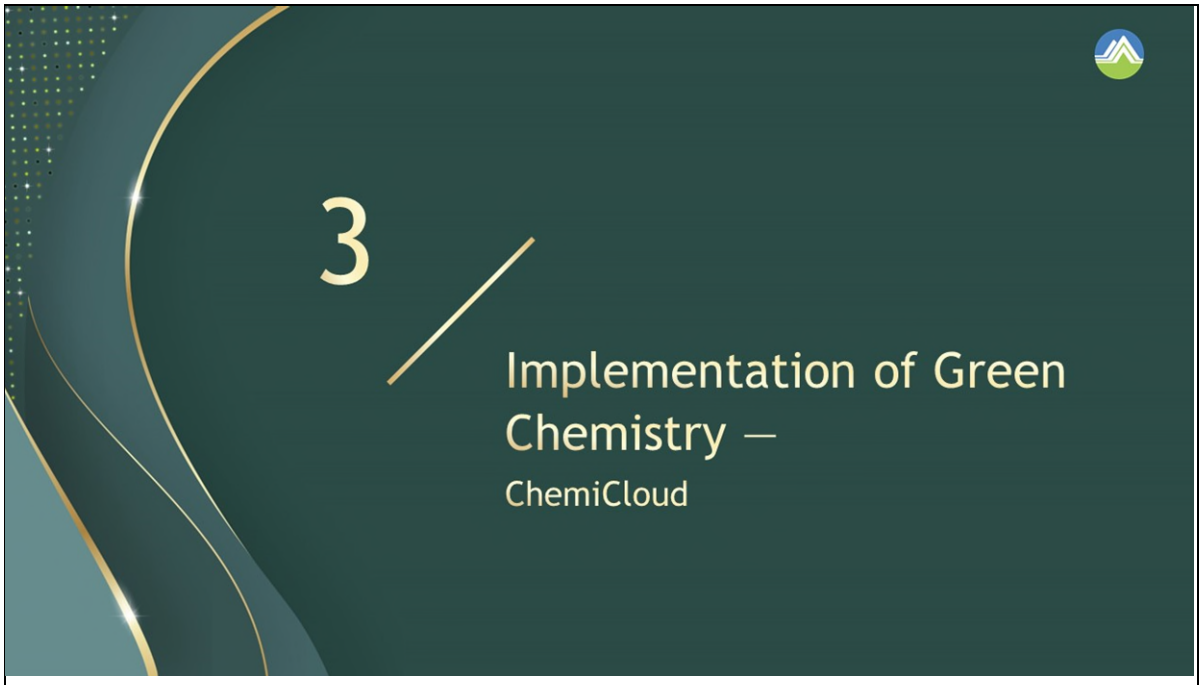

3
Implementation of Green Chemistry –
Industrial visiting

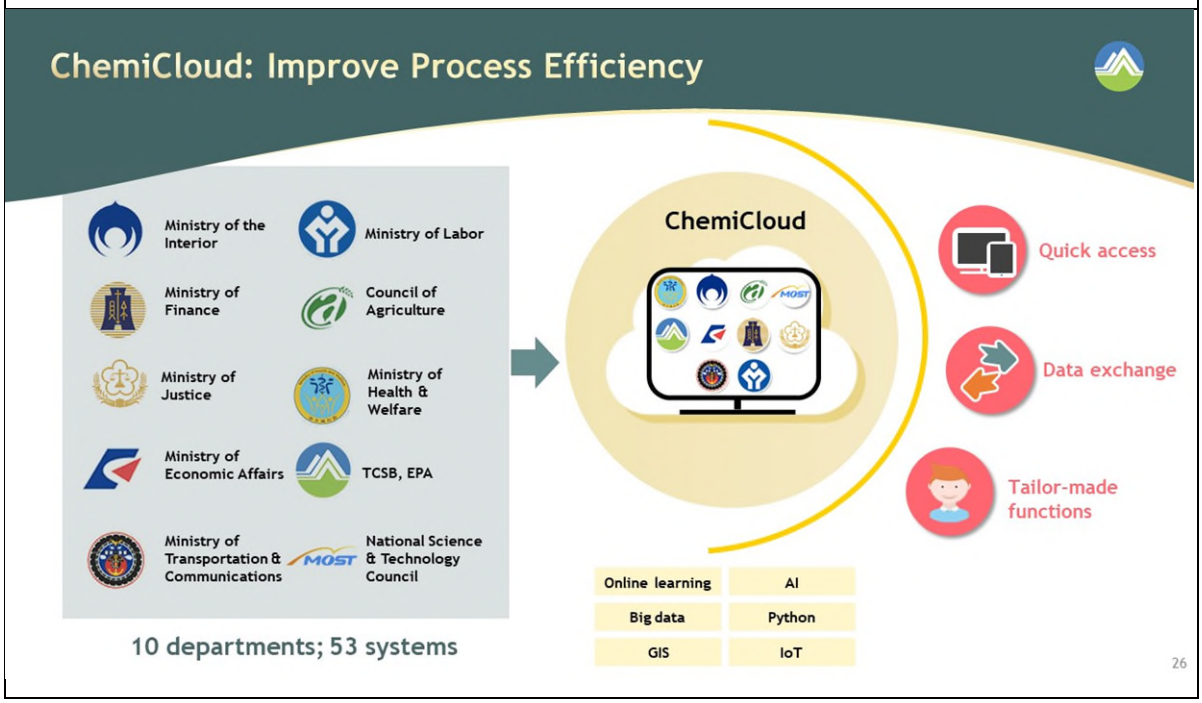

Industrial visiting
Objective: Promote Experience Sharing in Green Chemistry
ChemiCloud analyzing
+
Toxic chemical declaration information
Enterprise official website
ESG report
Green Chemistry Award winner list
Screening Visit List
Item
Leadership
Global brand / supplier
Potential
The largest production or consumption within Chinese Taipei
Annual production or consumption > 1,000 tons
Top 5% within Chinese Taipei in terms of annual production or consumption
Series force
With upstream and downstream relationships
Screening 15 companies
Six toxic chemicals
4 toxic chemicals
Plasticizer – bis(2 -ethylhexyl) phthalate (DEHP)
Plastic products related – bisphenol A (BPA) diisocyanate (TDI) epichlorohydrin (ECH)
2 toxic chemicals
Industrial solvent – dichloromethane (DCM)
Chromium trioxide – (chromic acid) for industrial paints
21


Industrial Visiting
benefits, risks, costs
Production and Management
Technology and Economics
Visit stage
Counseling stage
Industry green chemistry promotes experience exchange
15 businesses
Assessment
Chemical Substance Footprint Inventory (Quantitative)
Conformity to Green Chemistry Principles (Qualitative)
化學雲 ChemiCloud
The 12 principles of green chemistry link industry action measures
5 businesses
Cases
Evaluation
Chemical substance management risk hotspots (Quantitative)
Difference in greenness before and after substitution (Quantification)
Quantitative formula of 12 principles of green chemistry
Chemical Substance Management
Reduction Promotes Goals
Green chemistry promotion blueprint
Technology research
Production management
Cross-field cooperation
Marketing promotion
Applicable resources
Experts
Production management
Technology development
Market promotion
Resource application
Supply chain cooperation
Provide follow-up suggestions
22


Results of Industrial Visiting
Industry
Successful experience in promoting green chemistry
Large enterprise
Completed:
15 visiting
5 counseling
Chemical Industry
upstream
Middle and lower reaches
Chemical Raw Materials Manufacturing
1
counseling
2
plastic raw material manufacturing and product industry
3
4
5
counseling
Synthetic rubber raw material manufacturing
6
7
counseling
Other chemical manufacturing
8
9
Color dyeing paint manufacturing industry
10
Related Industries
Information electronics industry
11
12
13
Metal electromechanical industry (metal surface treatment industry
14
15
counseling
Alternatives have been manufactured (7)
Listed toxic chemicals are no longer used (3)
Some products have used substitutes (2)
23


Benefits of Industrial Visiting
Create an environment and atmosphere conducive to green transformation
Establish basic information on detoxification and safer substitution
Accelerate green transformation
24


3
Implementation of Green Chemistry –
ChemiCloud


ChemiCloud: Improve Process Efficiency
Ministry of the Interior
Ministry of Labor
Ministry of Finance
Council of Agriculture
Ministry of Justice
Ministry of Health & Welfare
Ministry of Economic Affairs
TCSB, EPA
Ministry of Transportation & Communications
National Science & Technology Council
10 departments; 53 systems
ChemiCloud
Quick access
Data exchange
Tailor-made functions
Online learning
AI
Big data
Python
GIS
IoT
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Framework & Functions of ChemiCloud

1 Personal Data Maintenance

2 Basic Data Query
- Manufacturer information
- Chemical material
- System intersection

3 Geographic Information
- Vendor distribution search
- Downstream manufacturers of substances of food safety concern
- Hazardous substance manufacturer search

4 Substances of International Concern

ChemiCloud

5 Multiple Screening of Manufacturers
- Suspicious manufacturers multiple screening
- Partial customization function

6 Warning Function

7 Statistics

8 Application Theme Zone
- Registration data of new chemical substances
- Food safety flow
- Disaster prevention and response
- Environmental medium detection watershed distribution

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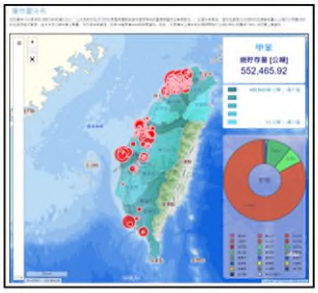
Framework & Functions of ChemiCloud

Geographic Information

Vendor Distribution Search	Substances of Food Safety Concern Downstream Manufacturers	Hazardous Substance Manufacturers Search	Operation Volume Distribution of Explosives and High-Risk Chemicals
			
The manufacturers' annual operation volume of the chemical substance	The location and flow transaction information of food and feed manufacturers	The manufacturers' location, disaster prevention information, operation status, etc.	The distribution of the quarterly workload uploaded by department

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Functions of ChemiCloud

Suspicious manufacturers multiple screening

Provides four-step condition setting, users can use the scheduling program to filter and output the list of manufacturers according to the "custom" filter conditions

1 Selected Chemicals	2 Set specific fields	3 Exclude specific areas	4 Set other conditions
Set the name of the filtering mode and select the chemical substance to be queried	Set specific businesses to be queried	Set specific businesses to exclude	Business items, specific river basins, address range, townships, urban areas, operating volume, time interval, etc.

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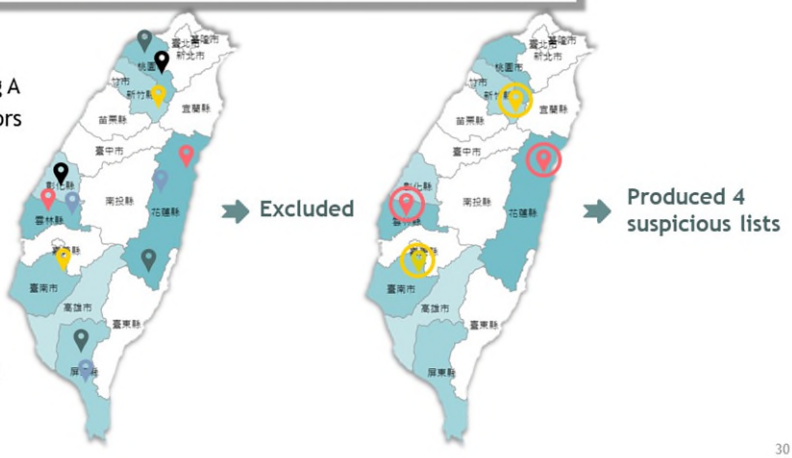
Functions of ChemiCloud

Take the screening function of suspicious manufacturers of selected substances as an example

Screening Mechanism

Screening Schematic Manufacturing A Selected Chemical Substance Vendors

- Ministry of Economic Affairs
- EPA
- Food and Drug Administration
- Ministry of Economic Affairs and the Environmental Protection Agency
- Ministry of Economic Affairs and the Food and Drug Administration



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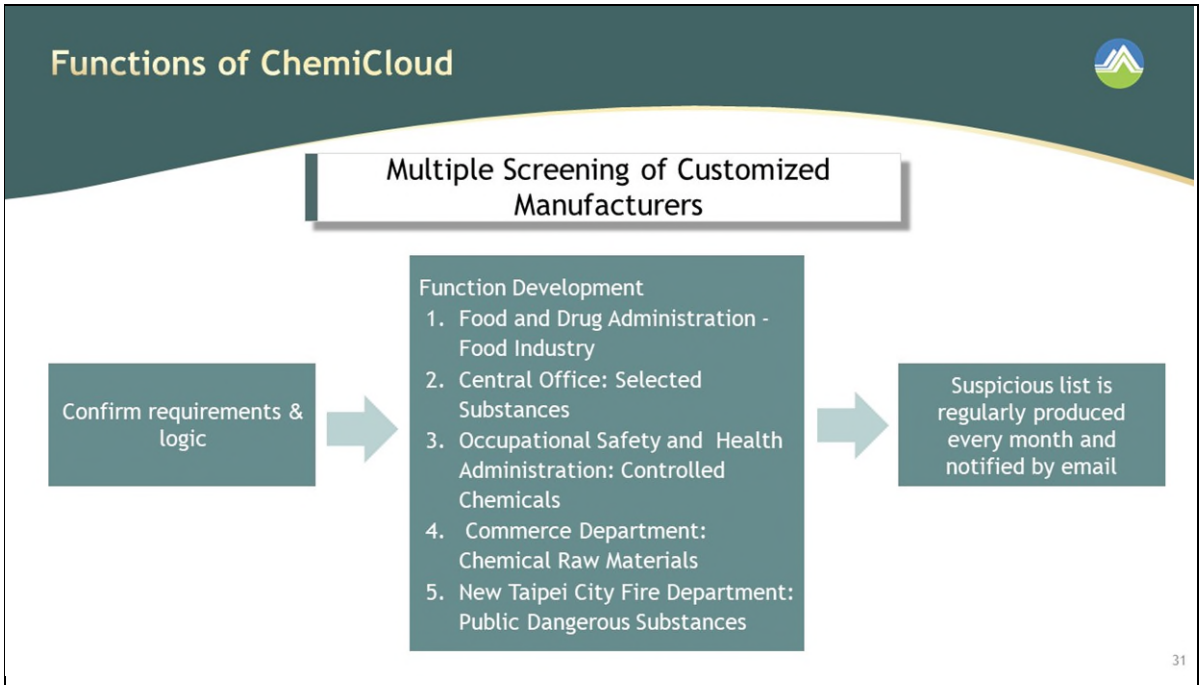
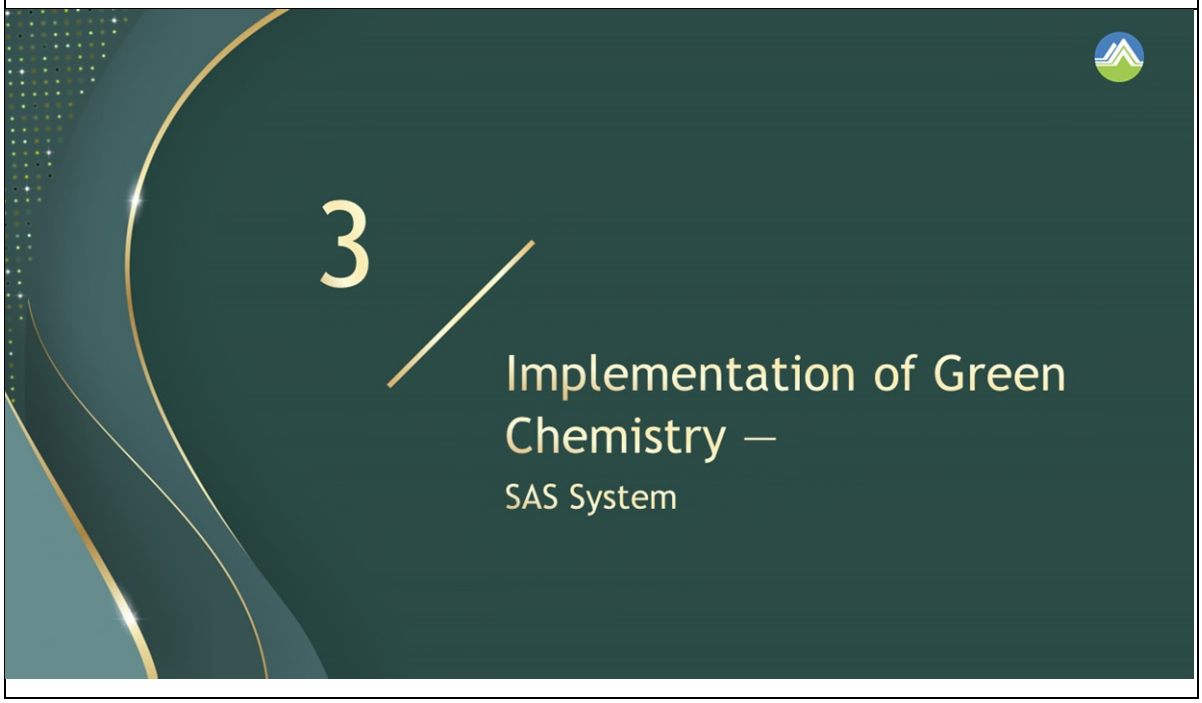

Functions of ChemiCloud
Multiple Screening of Customized Manufacturers
Confirm requirements & logic
Function Development
1. Food and Drug Administration - Food Industry
2. Central Office: Selected Substances
3. Occupational Safety and Health Administration: Controlled Chemicals
4. Commerce Department: Chemical Raw Materials
5. New Taipei City Fire Department: Public Dangerous Substances
Suspicious list is regularly produced every month and notified by email
31


3
Implementation of Green Chemistry –
SAS System

SAS System: Searching, Assessment & Screening High-Risk Chemicals

Searching

- PubChem
- Databases for alternative chemicals
  - ChemHAT (US)
  - SubPortPlus (EU)
  - etc.
- QSAR

Assessment

- GreenScreen® for Safer Chemicals
- GHS
- Workflow of evaluating toxic chemicals for safer alternatives

Screening system

For safer alternative chemicals

- Evaluation with 12 chemicals
- Validation

Quantitative structure-activity relationships (QSAR)

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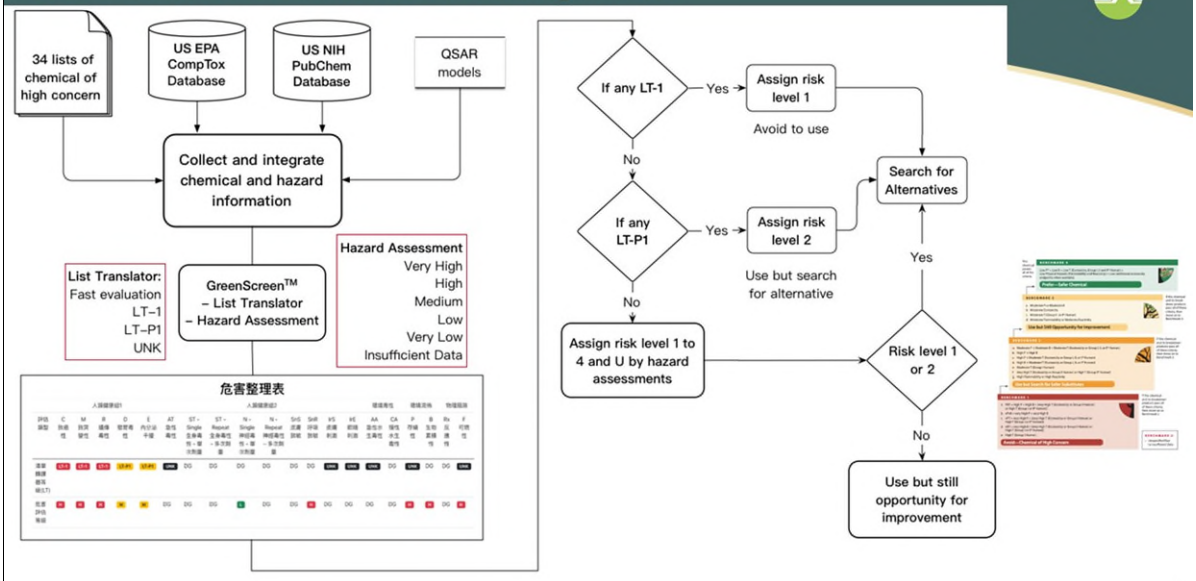
SAS Dataflow and Risk Level Assignment



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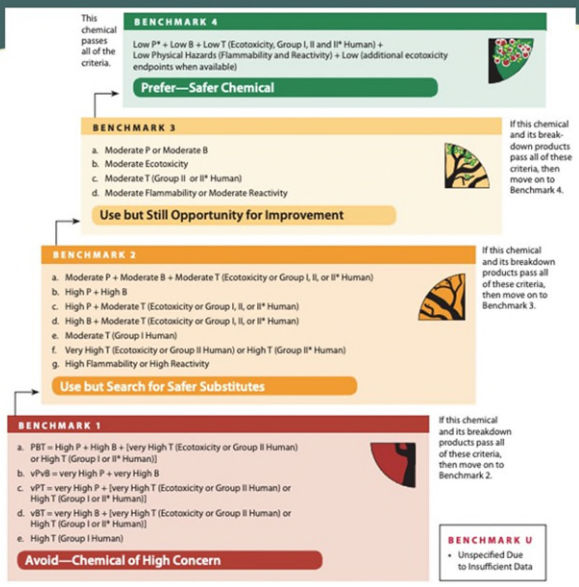
GreenScreen Benchmark ™ Score



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Data Sources of Hazardous Chemicals

No	Database / List name	Chemical counts	No	Database / List name	Chemical counts
1	Association of Occupational and Environmental Clinics	1,428	21	MAK Commission	1,591
2	Canada Domestic Substances List	22,065	22	OSPAR commission list	314
3	Canada Québec NESST - The Workplace Hazardous Materials Information System	5,663	23	PubChem with GHS hazard statements	147,408
4	ChemSec - The SIN List	1,037	24	The Canadian Environmental Protection Act - Toxic Substances List	159
5	DE Umweltbundesamt - Substances hazardous to water	12,670	25	The Endocrine Disruption Exchange List	1,483
6	EU - Endocrine Disruptors	564	26	Toxicology database from Taiwan EPA	341
7	EU ECHA PBT, vPvB assessments under the previous EU chemicals legislation	36	27	UN Stockholm Convention - Persistent Organic Pollutants	33
8	EU ECHA Annex XIV	109	28	US CA EHHA - The proposition 65 List	984
9	EU ECHA Annex XVII to REACH regulation - Substances restriction	2,248	29	US CDC NIOSH - Carcinogen List	126
10	EU ECHA Article 59(10) of REACH regulation - Candidate List of substances of very high concern for authorization	422	30	US DTSC CalSAFER - Safer Consumer Products Program	2,642
11	EU ECHA SVHC authorization list	108	31	US EPA - Consolidated List of Lists under the Clean Air Act	1,906
12	FooDB	85,594	32	US EPA - Emergency Planning and Community Right-to-Know Act - Toxic Release Inventory	16
13	GHS from Australia	6,943	33	US EPA - Integrated Risk Information System	571
14	GHS from Japan	3,291	34	US EPA CompTox*	279
15	GHS from Malaysia	682	35	US HHS - National Toxicology Program	20
16	GHS from New Zealand	5,439	36	US HHS - The 15th Report on Carcinogens	272
17	GHS from Republic of Korea	2,128	37	US WA - Washington Administrative Code Chap. 173-333	74
18	GHS/CLP from EU	4,474			
19	Grandjean, P., & Landrigan, P. J. (2014). Neurobehavioural effects of developmental toxicity. The lancet neurology, 13(3), 330-338.	214			
20	International Agency for Research on Cancer	1,090			

We retrieved data from US EPA CompTox to cover the 341 chemicals from Toxicology database from EPA (Chinese Taipei) currently

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Hazard Assessments for Chemicals

- We have organized data sources and removed duplicate chemicals by mapping CAS No and PubChem Compound ID (PubChem CID)
- A total of 187,342 chemicals were stored in the database. Chemical information and hazard annotation from data sources were also extracted and stored
- Hazard and risk levels were assigned according to GreenScreen Method ™
- Hazard assessments of a chemical is unspecified due to insufficient data
- We have constructed several quantitative structure-activity relationship (QSAR) models for hazard assessments

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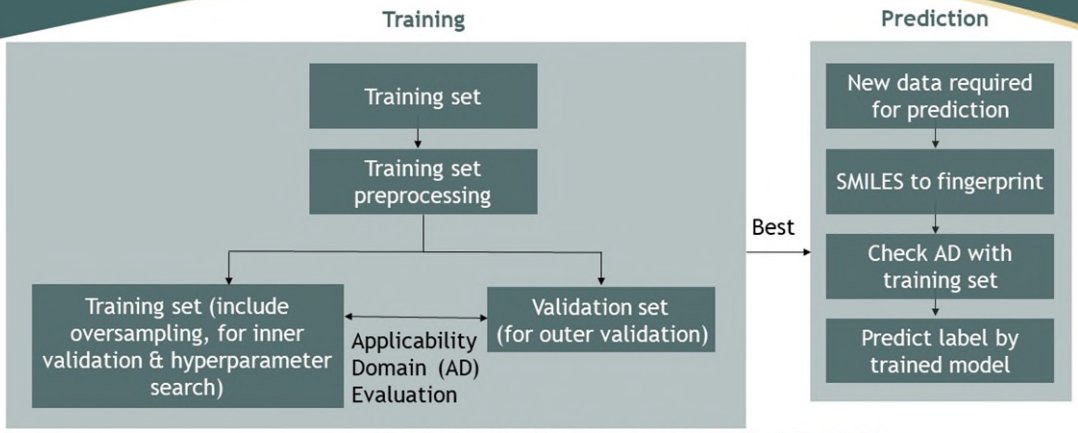
Workflow for Constructing QSAR Models: Carcinogenicity as an Example



Training set includes
1. Chemical ranked by GreenScreen Method (N=1440)
2. FooDB (N=70477) as low-risk chemicals
3. Carcinogenicity by DeepCarc team (N=863) as high-risk chemicals

Source: Li *et al. Front. Artif. Intell.*, 2021

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Safer Alternative Chemicals

- Safer alternative chemicals are collected from US EPA Safer Chemical Ingredients List
  - 1,050 chemicals grouped by their functional-use class
  - 23 classes including antimicrobial actives, chelating agents, colorants and more
- Another alternative sources are chemicals with high substructure similarity
  - Assigned as low risk-level and
  - Tanimoto Similarity > 0.8 calculated by US NIH PubChem Fingerprint

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SAS Website

https://sas.cmdm.tw/

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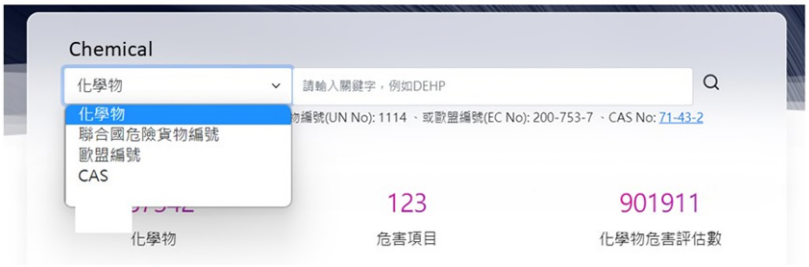
Searchable Columns



Users can search chemical by
1. Chemical Name
2. UN No: United Nations number
3. EC No: Commission Regulation number
4. CAS No: Chemical Abstract Service number

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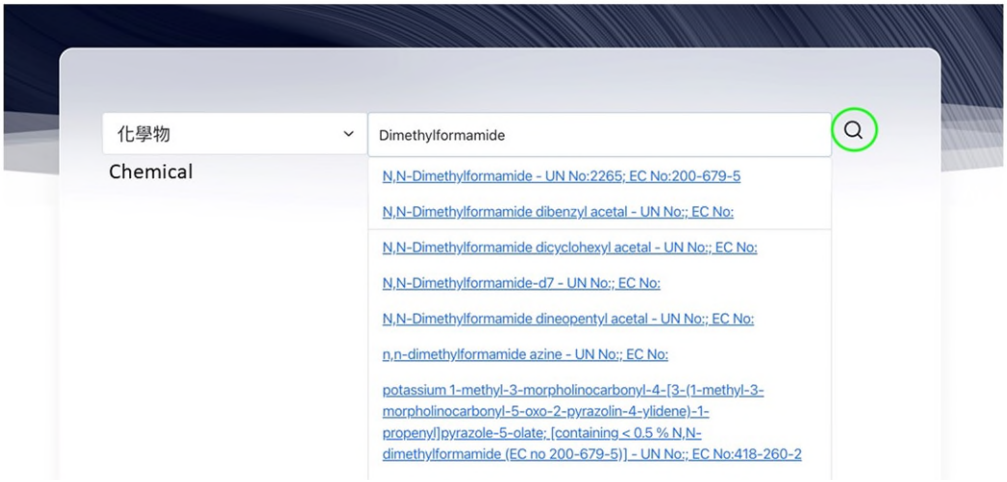
Search Suggestions



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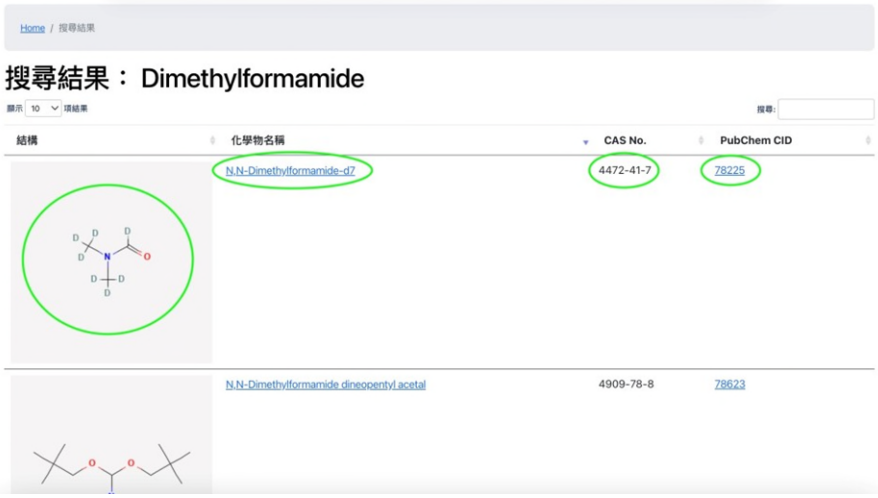
Search Results



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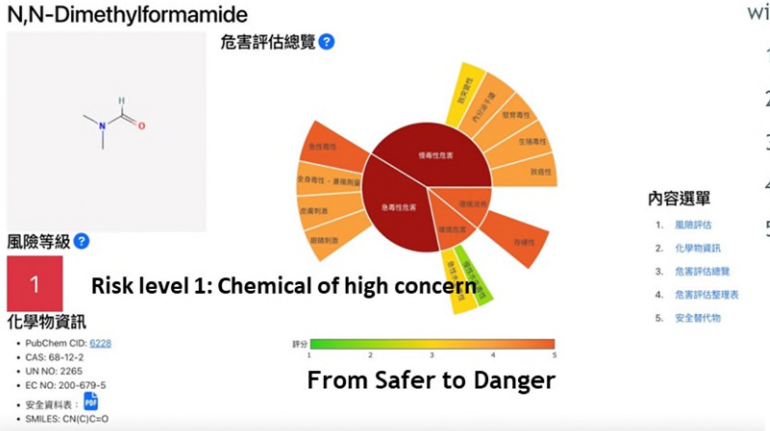
Chemical Hazard Overview and Visualization



Visualization of multiple hazard endpoints with categories including

1. Chronic toxicity
2. Acute toxicity
3. Environmental distribution
4. Environmental hazard
5. Physical hazard

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Detailed Information on Five Hazard Categories

危害評估整理表

	Chronic toxicity 慢毒性危害		Acute toxicity 急毒性危害	Environmental hazard 環境危害	Environmental distribution 環境流佈	Physical hazard 物理危害
評估類型	Carcinogenicity 致癌性	Mutagenicity 致突變性	Reproduction 生殖毒性	Development 發育毒性	Endocrine disruption 內分泌干擾	
危害評估等級 Hazard Assessment Level	高 H	中 M	中 M	高 H	高 H	

危害名稱　危害評估

致癌性

資料來源： 國際癌症研究機構清單
可信度： 相對高
危害等級分類清楚。

清單轉譯器等級：1級

第2a類：極可能為人體致癌物
額外註解： 國際癌症研究機構（IARC）分類系統中，有較強力證據表明可能會導致人類癌症的化合物

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Safer Alternative Chemicals

安全替代物

安全替代物分為兩類，依照工業用途，以及依照子結構列出功能可能可替代之較低風險化學物做為參考，實務上是否能替代仍須參照該領域知識。

依工業用途　依子結構

顯示 10 項結果　搜尋:

名稱	CAS	工業用途	安全性	註解
Propanoic acid, 2-hydroxy-, monopotassium salt	996-31-6	加工助劑-添加物	●	
4'-hydroxyacetophenone	99-93-4	防腐劑-抗氧化劑	▲	
1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)-	99-85-4	芳香劑	▲	缺乏足夠致敏資料
Terpineol	98-55-5	芳香劑	◐	

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Conclusions

- Regarding regulations, we established a chemical management guideline as the basis for chemical management by all ministries, and green chemistry is one of the basic directions.
- From a strategic perspective, we have organized industry visits, held innovation awards competitions, and incorporated ESG concepts to encourage the industry to introduce green chemistry.
- Regarding technology, we have established a cross-departmental chemical management platform, Chemical Cloud, to improve management efficiency.
- Develop the "searching, assessment, and screening system (SAS system)" to help domestic industry conduct hazard assessment and provide safer substitutes for introducing green chemistry.

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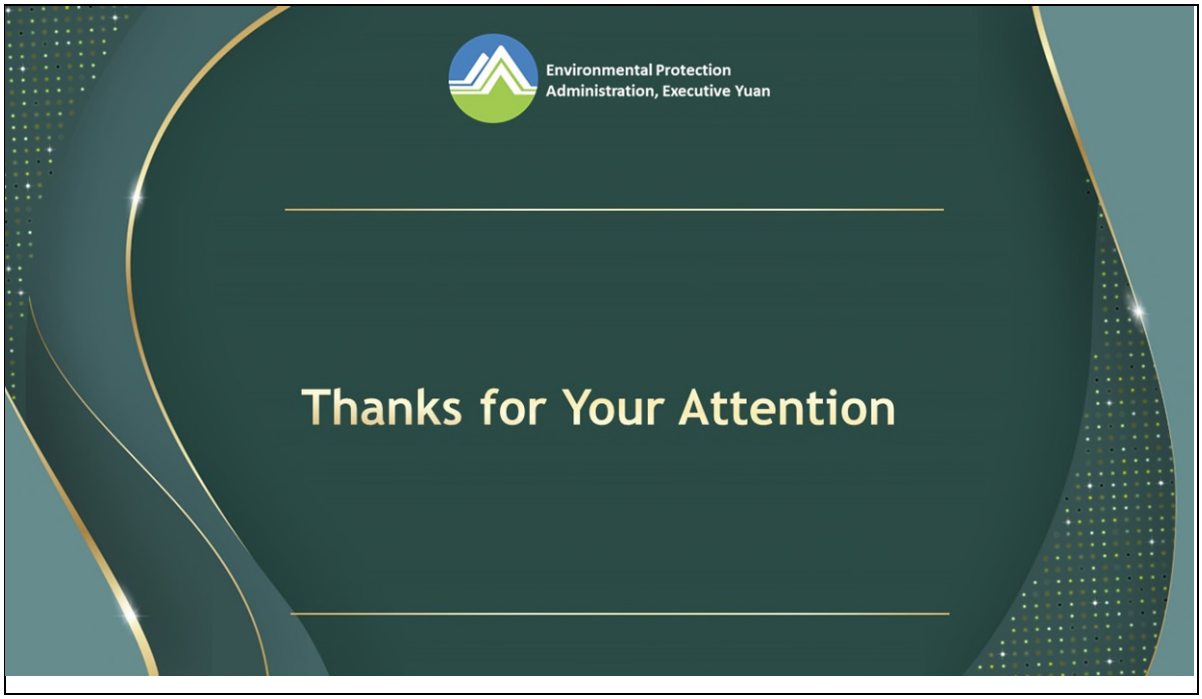
Environmental Protection
Administration, Executive Yuan
Thanks for Your Attention

（三） 2 月 15 日產業預備會議議程

Asia-Pacific Economic Cooperation

Chemical Dialogue Industry Pre-Meeting Agenda
15 FEBRUARY 2023

14:00 – 16:45 PST	**APEC Chemical Dialogue Industry Pre-Meeting**
14:00-14:35 [35 min]	**1. Welcome and Introductions**
14:00-14:05 [5 min]	**1.1 <u>Welcome from Industry Co-Chair</u>** ▪ **Mr. Sergio Barrientos**, Chemical Dialogue Industry Co-Chair On behalf of the American Chemistry Council, the Industry Co-Chair will welcome delegates and provide a brief summary of industry specific developments since CD29.
14:05-14:35 [30 min]	**1.2 <u>Delegation Introduction and Adoption of Meeting Agenda</u>** ▪ **Mr. Sergios Barrientos,** Chemical Dialogue Industry Co-Chair One individual from each delegation will be asked to indicate: 1. The economy they are representing 2. Identify specific challenges currently faced by the chemical industry in that economy; 3. Identify priority items for that delegate on the CD's agenda.
14:35-15:05 [30 min]	**2. CD APEC Project Proposals**
14:35-14:50 [15 min]	**2.1 <u>APEC CD Project Updates</u>** • Risk Assessment Workshop Project Update and Risk Assessment Compendium Project Update [U.S. Industry] *(5 minutes)* • APEC Chemical Recycling Project Update [U.S. Industry] *(5 minutes)* • OECD Mutual Acceptance of Data Project Update [U.S. Industry] *(5 minutes)*

14:50-15:05 [15 min]	**2.2 <u>New APEC Project Proposals</u>** The CD has several new project proposals on its agenda. The project proponents will summarize these new proposals for industry delegates and then seek industry comment and support for the proposal at the CD plenary on 17 February. 1. **Capacity building on GHS implementation convergence practices** (Singapore)
15:05 – 15:30 **[25 min]**	**Coffee Break**
15:30-15:50 **[20 min]**	**3. Regulatory Cooperation and Convergence**
15:30-15:50 [20 min]	**3.1 <u>Regulatory Updates</u>** The Industry Co-Chair will ask IPM delegates to discuss any regulatory developments in their economies of particular importance to industry. In particular, delegates will be asked to identify: (a) the impacts these changes have had on business, (b) any challenges that industry has experienced, and (c) potential ways that the CD might be able to address those challenges on a regional basis.
15:50-16:30 **[40 min]**	**4. Virtual Working Group Updates**
15:50-16:10 [20 min]	**4.1 <u>Reports of Virtual Working Groups</u>** The CD conducts most of its work through a series of virtual working groups ("VWGs"). Industry representatives of these VWGs will seek input on any items of note from their work since SOM3 of last year. These reports are intended to: • Summarize any documents being tabled at the CD; • Seek industry input on any updates since CD29 (SOM3 2022); and • Seek industry consensus on any decision points being posed to the CD. **These agenda items should not be a full summary of the updated to be presented at the CD.** • VWG on Regulatory Cooperation and Convergence *(5 minutes)*

	• VWG on GHS *(5 minutes)* • VWG on Data Exchange *(5 minutes)* • VWG on Marine Debris *(5 minutes)*
16:10-16:30 [20 min]	**4.2 <u>Industry Suggestions for New CD Topics</u>** This will be an open discussion, moderated by the Industry Co-Chair. The goal of the discussion is for industry to identify potential items for the CD to consider adding to its agenda. This could include identifying challenges that industry is facing in the region, potential pieces of work to undertake, or any other suggestions presented by industry representatives. Suggested topics to discuss: • Supply chain • GHS – Subcommittee of Experts • SAICM
16:30-16:45 **[15 min]**	**5. Meeting Summary and Next Steps**
16:30-16:40 [10 min]	**5.1 <u>Meeting Summary</u>** ▪ **Ms. Olivia Hernandez**, APCIC A representative from the APCIC will summarize the day's discussions and read the list of agreed upon action items for revision and endorsement by delegates.
16:40-16:45 [5 min]	**5.2 <u>Closing Remarks</u>** ▪ **Mr. Sergio Barrientos**, Industry Co-Chair The Industry Co-Chair will provide closing remarks for the Industry Pre-Meeting.
END OF CHEMICAL DIALOGUE INDUSTRY PRE-MEETING	

（四） 2 月 16 日綠色化學與化學品無害管理工作坊議程

Green Chemistry and Sound Chemicals Management Workshop Agenda

"Creating a Resilient and Sustainable Future for All"

Thursday, February 16, 2023; 9:00 am – 5:00 pm PST

Renaissance Palm Springs, California Hotel, Room Chino A/B

ITEM	TOPIC	TIME	PRESENTER
1.	**Welcome – U.S. Environmental Protection Agency** **Opening Remarks**	9:00 am	**Ashley Nelsen,** Senior Trade Advisor, Office of Chemical Safety and Pollution Prevention, U.S. EPA **Kent Shigetomi,** Chemical Dialogue Regulatory Co-Chair **Sergio Barrientos,** Chemical Dialogue Industry Co-Chair
2.	**Workshop Introduction** This session will explain the goals of the workshop, and hold a mini networking session.	9:30 am	**Hilary French (Workshop Moderator),** Regional Sub-Programme Coordinator for Chemicals and Pollution Action and Finance and Economic Transformations, UN Environment Programme
3.	**Global Chemicals Outlook** This session will discuss key findings from the UN Environment Programme's 2019 report, *Global Chemicals Outlook II: From Legacies to Innovative Solutions* and provide an update on	10:00 am	**Mr. Achim Halpaap,** Special Advisor to UNEP, Senior Advisor for Sustainability, Green Economy, and Chemicals & Waste Management at the

	the status of UNEP's work on Green and Sustainable Chemistry.		Green Policy Platform
4.	**HEALTH BREAK**	10:30 – 11:00 am	
5.	**Using the Toxics Release Inventory to Track the Implementation of Green Chemistry and Other Source Reduction Practices** This session will discuss how the U.S. EPA leverages its Toxics Release Inventory to track the implementation of green chemistry and other source-reduction practices.	11:00 am	**Dr. Steve DeVito,** Branch Chief, Data Analysis and Dissemination Branch, Office of Chemical Safety and Pollution Prevention, U.S. Environmental Protection Agency
6.	**Green Chemistry, Innovations, and Sustainable Development** This session will explore, from an industry perspective, the challenges and benefits of incorporating green chemistry and UN Sustainable Development Goals (SDGs) performance indicators in the innovation process to maximize societal contributions.	11:30 am	**Dr. Andrew Liu,** Global Product Sustainability Strategy Leader at Chemours
7.	**Advancing Informed Substitution under Canada's Chemicals Management Plan** This session will discuss how the Government of Canada is addressing substitution challenges associated with chemicals of concern, including in products, and how this may support green chemistry initiatives in Canada.	12:00 pm	**Alexis Gagnon,** Unit Head - Chemicals Strategies and Innovation Products Division, Environment and Climate Change Canada
8.	**LUNCH BREAK**	12:30 pm – 1:30 pm	
9.	**Product Safety and Sustainability in Innovation** This session will discuss Stepan's collaborative product safety program including assessment tools and method selection as well as the	1:30 pm	**Dr. Dieldrich Bermudez,** Senior Toxicologist at Stepan Company

	coordinated new product development / safety assessment process and existing product line review.		
10.	**Green Chemistry Strategies and Implementation Experiences** This session will discuss the green chemistry strategies and experiences of Chinese Taipei's Environmental Protection Administration.	**2:00 pm**	**Dr. Chun-sheng Wu,** Toxic and Chemical Substances Bureau, EPA
11.	**Best Green Chemistry Practices and Sustainability Promotion Strategies** This session will discuss how to promote green chemistry with enterprises from the perspective of NGOs and share best practices.	**2:30 pm**	**Dr. Chun-Hsu Lin,** Chung-Hua Institution for Economic Research
12.	**HEALTH BREAK**	3:00 pm – 3:30 pm	
13.	**Speaker Panel on Green Chemistry** This speaker panel will discuss opportunities for adopting and advancing green chemistry. Time for audience Q&A.	**3:30 pm**	**Mr. Achim Halpaap,** UNEP and Green Policy Platform **Dr. Steve DeVito, U.S. EPA** **Dr. Andrew Lui,** Global Product Sustainability Strategy Leader at Chemours **Alexis Gagnon,** Environment and Climate Change Canada **Dr. Dieldrich Bermudez,** Senior Toxicologist at Stepan Company **Dr. Chun-sheng Wu,** Toxic and Chemical

			Substances Bureau, EPA **Dr. Chun-Hsu Lin,** Chung-Hua Institution for Economic Research
14.	**Closing Remarks** This session will discuss the workshop survey information, meeting documents and notes, and request for case study topics.	4:30 pm	**Ashley Nelsen,** U.S. EPA

（五） 2 月 17 日化學對話全體會議議程

Asia-Pacific Economic Cooperation

30th Chemical Dialogue ("CD30") AGENDA

"Creating a Resilient and Sustainable Future for All"

Location: Renaissance Hotel, Palm Springs

Room: Madera

17 February 2023

09:00 – 17:10 PST	**30th APEC Chemical Dialogue (CD)**
09:00-09:55 [55 min]	**1. Welcome and Introductions**
09:00-09:05 [5 min]	**1.1 Welcome Note from United States** ▪ **Ashley Nelsen**, U.S. Environmental Protection Agency, United States [TBC] The United States, the host of APEC 2023, will welcome delegates to the 30th Chemical Dialogue
09:05-09:10 [5 min]	**1.2 Introduction from Government Co-Chair** ▪ **Kent Shigetomi**, Chemical Dialogue Government Co-Chair The Government Co-Chair will convene the first meeting of the Chemical Dialogue ("Dialogue" or "CD") in 2023 and provide a brief outline of the objectives and operating procedures for the [hybrid?] meeting.
09:10-09:15 [5 min]	**1.3 Welcome from Industry Co-Chair** ▪ **Sergio Barrientos**, Chemical Dialogue Industry Co-Chair The Industry Co-Chair will welcome delegates and provide a brief summary of industry specific developments since CD29.
09:15-09:55 [40 min]	**1.4 Delegation Introduction and Adoption of Meeting Agenda** ▪ **Kent Shigetomi,** Chemical Dialogue Government Co-Chair ▪ **Sergio Barrientos,** Chemical Dialogue Industry Co-Chair Each delegation will be asked to indicate: 1. The economy they are representing 2. Whether they are representing government or the private sector

	3. Indicate if they would like to propose a change to the agenda or adopt it as is 4. Priorities for the meeting. For example, GHS, regulatory cooperation, sustainability and marine debris etc.
9:55-10:05 [10 min]	**1.5 Global Treaty on Plastics [TBC]** ▪ **Hilary French,** UN Environment Programme Meeting Documents ▪ TBC A representative from UNEP will provide an update on the outcome of the first intergovernmental negotiating committee (INC-1), held in Uruguay in November 2022. The INC process was established to implement UNEA Resolution 5/14, 'End Plastic Pollution: Towards an internationally legally binding instrument.' The agreement is expected to address the full lifecycle of plastics, including production, design, and disposal, as well as the design of reusable and recyclable products and materials.
10:05-10:25 **[20 min]**	**2. APEC 2023 Priorities and Management Update** *(Presenters are encouraged to reserve several minutes for questions following each presentation)*
10:05-10:15 [10 min]	**2.1 Committee on Trade and Investment (CTI) Chair Update** ▪ **Blake Van Velden,** CTI Chair [pre-recorded video] Meeting Documents ▪ 2023/SOM1/CD/XX-XX Mr. Blake Van Velden will present the latest work on the CTI, as well as CTI's collaboration with the Chemical Dialogue.
10:15-10:25 [10 min]	**2.2 APEC Secretariat Update** ▪ **Uyen Pham**, APEC CD Secretariat Meeting Documents ▪ 2023/SOM1/CD/XX - XX The APEC CD Secretariat will briefly summarize any relevant administrative developments within APEC and will provide an overview on the APEC project cycle process.
10:25 – 10:40 **[15 min]**	**Coffee Break**

10:40-12:40 **[120 min]**	**3. Regulatory Cooperation and Convergence** *(Presenters are encouraged to reserve several minutes for questions following each presentation)*
10:40-11:40 [60 min]	**3.1 <u>Regulatory Updates</u>** Economy interventions • AustraliaCanada • China • Indonesia • Japan • Korea • New Zealand • Philippines • Singapore • Chinese Taipei • United States • Viet Nam <u>Meeting Documents</u> ▪ 2023/SOM1/CD/XX - XX This session will allow for economies to briefly (5 min per economy) introduce any regulatory updates. Economies may notify the APEC Secretariat if they would like to be added to the list of economy updates. If possible, please table your intervention in advance with the APEC Secretariat.
11:40-11:50 [10 min]	**3.2** **<u>Virtual Working Group on Regulatory Cooperation and Convergence (VWGRCC)</u>** ▪ **Raleigh Davis**, VWG on Regulatory Cooperation and Convergence <u>Meeting Documents</u> ▪ 2023/SOM1/CD/XX – XX The industry co-chair of the VWGRCC will provide an update regarding the implementation of the VWG work plan for 2023.
11:50-12:00 [10 min]	**3.3 <u>OECD Mutual Acceptance of Data Project Update</u>** ▪ **Raleigh Davis,** American Chemistry Council <u>Meeting Documents</u>

	▪ 2022/SOM3/CD/XX– Adherence to OECD Mutual Acceptance of Data System The "Adherence to OECD Mutual Acceptance of Data (MAD) System Project (CD 02 2022S) aimed to provide information about the MAD system to assist APEC economies that are considering joining. A representative from the OECD "Adherence to OECD Mutual Acceptance of Data (MAD) System Project (*CD 02 2022S*) will provide an update on the webinar hosted in November 2022.
12:00-12:20 [20 min]	**3.4 Toxics Release Inventory** ▪ **Dr. Steve Devito,** Office of Chemical Safety and Pollution Prevention, U.S. EPA The U.S. Environmental Protection Agency's Toxics Release Inventory (TRI) is a resource for learning about toxic chemical releases and pollution prevention activities reported by industrial and federal facilities. TRI data support informed decision-making by communities, government agencies, companies, and others. Meeting Documents
	LUNCH
14:30-15:10 **[40 min]**	**4. Globally Harmonized System for the Labelling and Classification of Chemicals (GHS)** *(Presenters are encouraged to reserve several minutes for questions following each presentation)*
14:30-14:40 [10 min]	**4.1 Virtual Working Group on GHS** **Fabien Henry**, VWG on GHS, Industry Co-Chair Meeting Documents ▪ 2023/SOM1/CD/XX–XX An update regarding implementation of the VWG on GHS 2022 work plan, the 2022 survey report, and the GHS convergence proposal will be provided.
14:40-14:50 [10 min]	**4.2 Status of the G.R.E.A.T. Project** ▪ **Ellen Lin**, Chinese Taipei Meeting Documents ▪ 2023/SOM1/CD/XX - Chinese Taipei will deliver a short update on the GHS Reference Exchange and Tool ("G.R.E.A.T.") project and website.

14:50-15:00 [10 min]	**4.3 <u>Preparation Checklist and Guidance on How to Upgrade to Higher GHS Version Project Update</u>** ▪ **Raditya Eka Permana,** National Authority for Chemical Weapons Convention, Directorate for Upstream Chemical Industry, Ministry of Industry, Indonesia [TBC] <u>Meeting Documents</u> ▪ 2023/SOM1/CD/XX– XX Th "Preparation Checklists and Guidance" project aims to develop guidance for economies to easily adapt when there is a new revision to GHS being introduced by the UN. A representative from the Ministry of Industry in Indonesia will provide an update on the project's progress.
15:00-15:10 [10 min]	**4.4 <u>Capacity Building on GHS Implementation Convergence Project Update</u>** ▪ **Fabien Henry,** Singapore Industry CD Representative [TBC] <u>Meeting Documents</u> ▪ 2023/SOM1/CD/XX–XX With a focus on promoting convergence of GHS implementing regulations, this project aims to create a series of webinars for regulators and industry to address needs identified in the past APEC CD surveys on GHS implementation convergence and initiate exchanges on possible ways forward. A representative from the "Capacity Building on GHS Implementation Convergence" project will provide an update on the project's progress.
15:10-15:25 **[15 min]**	**5. Data Exchange**
15:10-15:25 [15 min]	**5.1 <u>Virtual Working Group on Data Exchange</u>** ▪ **Natalia Druzhinina**, CIS Center, Russia ▪ **Cissie Yeung**, Singapore Chemical Industry Council (SCIC) <u>Meeting Documents</u> ▪ 2023/SOM1/CD/XX – XX An update will be provided regarding implementation of the VWG on Data Exchange work plan, including an update on the proposed series of informational webinars.
15:25 – 15:45	**Coffee Break**

[20 min]	
15:45-16:35 **[50 min]**	**6. Marine Debris and Sustainability**
15:45-15:55 [10 min]	**6.1 <u>Green Chemistry and the Sound Management of Chemicals Project Update</u>** ▪ **Ashley Nelsen**, U.S. Environmental Protection Agency <u>Meeting Documents</u> ▪ 2023/SOM1/CD/XX – XX The objective of this project (CD02 2022A) is to promote knowledge sharing and raise awareness within APEC member economies on innovations, practices, and policies among regulators, industry, and supply chain stakeholders to extend the application of sustainable chemistry principles and implementation of source reduction practices to advance the sound management of chemicals. Mrs. Nelsen will share an update from the Green Chemistry Workshop and next steps.
15:55-16:15 [20 min]	**6.2 <u>APEC Chemical Recycling Project Update</u>** ▪ **Stewart Harris**, American Chemistry Council (ACC) <u>Meeting Documents</u> ▪ 2021/SOM3/CD/XX -XX A representative from U.S. industry will provide an overview of the APEC chemical recycling webinar series hosted in 2022 (*CD 01 2022S*) and next steps envisioned for 2023.
16:15-16:25 [10 min]	**6.3 <u>GOS Project Update: Services that support the clean-up of marine debris'</u>** ▪ **Christopher Langman,** Chair, Australian Committee for Pacific Economic Cooperation (AusPECC) <u>Meeting Documents</u> ▪ 2023/SOM1/CD/XX - XX A representative for the Australian APEC Group on Services project 'Services that support the clean-up of marine debris' will give an update on the progress of activities.
16:25-16:30 [5 min]	**6.4 <u>OFWG Project Update: OFWG 07 2021A - Good Practices for Traceability Mechanism of Marine Debris Recycled Products in the APEC Region</u>**

	▪ **Chen, Hung-Wen,** Section Chief, Ocean Conservation Administration (Chinese Taipei) Meeting Documents ▪ 2023/SOM1/CD/XX - XX A representative of Chinese Taipei will give an update on the progress of activities.
16:30-16:40 [10 min]	**6.5 Virtual Working Group on Marine Debris** ▪ **Olivia Hernandez**, Virtual Working Group on Marine Debris Meeting Documents ▪ 2023/SOM1/CD/XX - VWG on Marine Debris Update The coordinator for the Virtual Working Group on Marine Debris will present on APEC's recent work on marine debris, including related work taking place in the CTI, OFWG, PPSTI, ABAC and other fora.
16:40-17:10 **[30 min]**	**7. Meeting Summary and Next Steps**
16:40 -16:55 [15 min]	**7.1 Meeting Summary** ▪ **Dj Wolff**, Asia Pacific Chemical Industry Coalition (APCIC) A representative from APCIC will summarize the day's discussions and read the list of agreed upon action items for revision and endorsement by delegates.
16:55-17:00 [5 min]	**7.2 Document Classification** ▪ **Uyen Pham**, APEC CD Secretariat Meeting Documents ▪ 2022/SOM3/CD/XX - Document Classification List The APEC CD Secretariat will review the Document Classification List and ask delegates to endorse any revisions within the next two weeks.
17:00-17:10 [10 min]	**7.3 Closing Remarks** ▪ **Kent Shigetomi**, Chemical Dialogue Government Co-Chair ▪ **Sergio Barrientos**, Chemical Dialogue Industry Co-Chair The Government and Industry Co-Chairs will provide closing remarks for the 30th Chemical Dialogue.
END OF 30TH CHEMICAL DIALOGUE	