

# 高雄市大社工業區○○石化疑似爆炸事故

## Suspicious explosion in petrochemical company of Dashe Industrial Park of Kaohsiung City

### 一、摘要

2014年7月10日7時04分，○○○○化學股份有限公司之FBD-I系統發出高壓警報，現場亦傳出爆炸聲響，發現FBD-I系統冒煙著火，現場同仁前往滅火，並開啟消防蒸汽，同時關斷各入料阻閥。並將該區設備MCC斷電。7時20分時，消防隊進入廠內進行救災。約於9時FBD-I大致控制，消防人員約於10時10分左右離廠，此事故未造成人員傷亡。

經調查，本次事故直接原因乃為FBD-I系統濕粉段火源經踢料機送入流動乾燥床內發生基本粉燃燒塵爆。依調查結果，本廠進行多項改善預防對策，如增加粉碎機檢查保養頻率、定期清理濕粉段累積的粉塵及監控齒輪箱機油溫度等措施，以期降低FBD事故再發生之風險。

關鍵詞：(1)基本粉

### Abstract

At 7:04 am, July 10, 2014, the FBD-I system of ○○ petrochemical company sent out a high pressure alarm, and explosion sound can be heard from the site too. Smoke was found on the FBD-I system, colleagues on the work site brought the fire extinguisher to try to stop the fire, meanwhile, fire-fighting steam was also opened, in the meantime, all the material inlet stop valves were closed. Moreover, power for equipment MCC for that area was stopped too. At 7:20 am, the fire-fighting team entered the plant to do its rescue job. At about 9:00 am, FBD-I was roughly controlled, and the fire-fighters left from the plant around 10:10 am, meanwhile, this accident did not cause any injury or death.

After investigation, it was found that the direct reason was because the fire source of the wet powder section of FBD-I system was sent into the fluid drying bed by material kicking machine, then burning dust explosion of basic powder occurred. According to the investigation result, this plant has conducted several improvement and preventive actions, for example, increasing the checking and maintenance frequency of the crushing machine, make periodical cleaning of the dust accumulated at the wet powder section, and the monitoring of the

temperature of the oil in the gear box, it is hoped that the risk of re-occurrence of FBD accident can be reduced.

Keywords : (1) basic powder

# 臺中市大肚區○○製藥公司火警事故

## Fire accident in ○○ Pharmaceutical Company in Dadu district of Taichung City

### 一、摘要

○○化學股份有限公司王田廠於 105 年 2 月 1 日上午 05 時 35 分發生燃燒爆炸，現場值班主管立即於上午 05 時 50 分透過 119 通報系統通知各相關單位，消防隊於上午 06 時 02 分抵達工廠進行搶救；當時廠區之毒化物無運作，火勢控制後發現毒化物儲存區有遭受波及，於上午 07 時 50 分再次向環保局通報，並同時通知供應商台灣塑膠股份有限公司仁武廠協助應變處理；災後廢棄物依廢棄物清理法進行處理。

關鍵詞：(1)燃燒爆炸、(2)毒化物儲存區

### Abstract

A burning explosion occurred in the Wang-Tien plant of ○○ Chemical Co., Ltd. at 5:35 am on Feb. 01, 2016. The on-site supervisor notified immediately at 05: 50 am through 119 notification system to the related departments, and fire-fighting tem arrived at 6:02 at the plant for rescue; at that moment, toxic substance in that plant was not in operation, after the fire was under controlled, the toxic substance storage area was found to be damaged, at 7:50 am, a report was sent to the environmental protection agency again, meanwhile, the RenWu plant of supplier ○○○○ Co., Ltd. was notified to assist for the treatment; after the accident, the waste material was treated according to waste cleaning method.

Key words: (1) Burning explosion, (2) Toxic substance storage area

# 新竹市科學園區○○科技火警事故

## Fire accident at ○○ Technology in science-based industrial park in Hsinchu City

### 一、摘要

○○科技股份有限公司從事有機光電材料與特用化學品之研發及製造，公司成立逾 15 年，營業額逐年成長，設備也持續增加，在工安、消防上設備的投入也持續增加。

○○科技 17 號廠房於民國一〇五年四月九日星期六凌晨三點半，發生火災。火災原因為抽氣櫃有機溶劑化學品洩漏並因櫃內加熱反應設備之高溫，導致自燃，並且夜間時間本公司並無值班人員，因此進一步形成大火，火災波及研發實驗室、原料間部份區域。

○○科技此次事件後，進行原因檢討，並改進相關事項：操作人員及單位主管再訓練，夜間無執班人員禁止高溫設備操作，抽氣櫃內安裝高溫自動啟用乾粉滅火器等相關措施，使災害降至最低。

關鍵詞：(1)實驗室火災、(2)有機溶劑自燃

### Abstract

○○ Technology Co. Ltd. was a company devoted to the R&D and manufacturing of organic optoelectronic material and special fine chemical. This company was founded for more than 15 years, and its business grows year by year, meanwhile, its equipment was in continuous increase, and its investment in industrial safety and fire-fighting equipment was in continuous increase too.

No. 17 plant of Luminescence Technology Corporation had fire accident at 3:30 am in April 09, 2016, which was Saturday. The main cause of the fire accident was organic chemical leak in the exhaustion cabinet, meanwhile, high temperature in the heating reaction equipment of the cabinet led to self-combustion, moreover, since there is no person on duty during the night, therefore, the fire situation gets worse, and the fire accident has damaged the R&D lab, and some of the areas of the raw material room.

After the occurrence of this accident in Luminescence Technology Corporation, root cause investigation was conducted, and related items were

improved: Re-training added for operating personnel and department supervisor, and if there is no person on duty, high temperature equipment operation will be prohibited, meanwhile, dry powder fire extinguisher auto-activated for high temperature will be installed in the exhaustion cabinet to reduce the accident to minimal level.

Keywords : (1)Fire accident in the lab 、(2)Self-combustion of the organic solvent

# 苗栗縣西湖鄉○○塗料火警事故

## Fire accident at ○○ paints company in Hsi-Hu Township of Miaoli County

### 一、摘要

105年4月10日上午○○塗料工業股份有限公司下廠房發生火災，導致毒化物儲存區域受損。儲區內當時存放有毒化物三氧化鉻及重鉻酸銨，因火災發生時無法得知廠內儲存之毒化物三氧化鉻及重鉻酸銨是否發生外洩，而所有救災消防水及其他化學藥品皆沿地面地勢流向較低窪之區域，因此為避免造成可能造成之大規模擴散，故緊急採取防堵方式以土堤施作一次及二次圍堵，並同時準備還原劑焦亞硫酸鈉(偏亞硫酸鈉)作為必要時六價鉻減毒之準備。

關鍵詞：(1) 三氧化鉻、(2) 重鉻酸銨、(3) 毒化物

### Abstract

One of the factories in ○○ Paint Co. Ltd. was burned down by a fire on 11<sup>th</sup> of April, 2016 and caused the damage of the toxicant storage room. There were two toxicants stored in the room including chromic acid and ammonium dichromate. Since the inadequacy of handling the toxicant substrates during the fire and the shortage in emergency equipment, a simple blocking strategy was performed by constructing two embankments within the trend of liquid flow for collecting the sewage. On the other hand, sodium pyrosulfite (also named sodium metabisulfite)  $\text{Na}_2\text{S}_2\text{O}_5$  was prepared on the side as reduction reagent for decrease of the toxicity of hexavalent chromium by reducing  $\text{Cr}^{6+}$  into  $\text{Cr}^{3+}$  when necessary.

Keywords : (1) Chromic acid, (2) Ammonium dichromate, (3) Toxicant

# 桃園市平鎮區○○電子公司火警事故

## Fire accident at ○○ Corporation at Ping-Cheng District of Taoyuan City

### 一、摘要

此事故發生於 104 年 12 月 21 日，該公司廠內三樓因電氣災害導致火警事故，○○電子公司為毒化物運作廠商，有波及毒化物之虞，技術小組依二號作業出勤，應變初期由消防單位架設外圍水線以控制火勢，技術小組於事故點周遭進行環境監測，火勢撲滅後消防單位利用水霧驅散煙塵並逐樓確認殘火狀態，技術小組持續進行環境監測並會同消防、環保、業者確認現場無立即性危害後，將現場善後復原作業後續交由環保局督導。

關鍵詞：印刷電路板

### Abstract

This accident happened in December 21, 2015. 3F of a plant of that company had a fire accident due to electric disaster, meanwhile, ○○ electronic company is a toxic substance operation supplier, therefore, there is suspicion of the damage of toxic substance area, therefore, the technical team went on its duty according to number 2 operation, in the initial emergency dealing period, the fire-fighting department install a water line at the peripheral area to control the fire. Meanwhile, technical team has made environmental monitoring at the peripheral of the accident site, after the fire was extinguished, the fire-fighting department has used water fog to remove the smoke, meanwhile, residual fire was searched floor by floor, meanwhile, the technical team has made continuous effort on the environment monitoring, meanwhile, together with the fire-fighting, environmental protection department and supplier, the site was confirmed to have no immediate hazard, then the accident side was recovered, and then it was passed to the environmental protection agency for monitoring.

Keywords : printed circuit board

# 新北市○○醫療器材公司火警事故

## The Fire incident for ○○ medical equipment company, in New Taipei City

### 一、摘要

2015年07月14日15時13分，新北市瑞芳區某醫療器材公司發生火警事故，事故現場火勢越來越大趨勢，且該公司為毒性化學物質運作廠家，根據毒化物專責人員表示有波及毒化物環氧乙烷之可能。本案經新北市消防局、新北市環保局及行政院環境保護署北區環境事故專業技術小組台北隊到場協助處理，初步將毒化物環乙烷鋼瓶全數搬離現場，經清點毒化物及數量皆未受到火勢波及。現場消防廢水酸鹼值為5~6，工廠環境周界及事故現場量測揮發性有機物（TVOC）皆為N.D，後續交由環保局督導業者完成。

關鍵詞：(1)環氧乙烷、(2)醫療器材

### Abstract

At 15:13 on July 14 2015, the new Taipei Rueifang Area Medical Company fire accidents, the accident scene the fire was growing trend, and the company is the manufacturer of toxic chemical substances, according to specialist staff Duhua Wu expressed Duhua Wu possible spread of the ethylene oxide. Case by New Taipei City Fire Department, New Taipei City Environmental Protection Administration and the Environmental Protection Agency Environmental Accident North expertise Taipei team arrived at the scene to assist the process, will initially Duhua Wu cyclohexane full cylinder to move out to the scene, and counting inventory Duhua Wu garnered affected by the fire. Site fire wastewater pH value of 5 to 6, the perimeter of the factory environment and accident scene measurement of volatile organic compounds (TVOC) are all N.D, the follow-up by the Environmental Protection Agency to complete supervision of the industry.

Keywords : (1)Ethylene oxide、(2)Medical equipment



# 高雄港○○碼頭化學品貨櫃洩漏事故

## Leak accident of chemical container at Harbor○○of Port of Kaohsiung

### 一、摘要

接獲高雄港港務消防分隊通報：「○○碼頭貨櫃掉落地面，有粉末狀化學品洩漏，貨櫃業主為○○公司，UN3455，請求技術小組支援。」與○○公司確認洩漏物為鄰-甲酚，非列管毒化物。技術小組 04 時 50 分出勤，05 時 32 分抵達，現場為 40°C 保溫槽之 ISO TANK 貨櫃翻覆路面，槽體人孔蓋有微量液狀滲漏，以 GC/MS、FTIR、拉曼偵測器定性分析確認為液態之鄰-甲酚，以吸液棉吸附並於下方放置盛液盤，未洩漏至路面，液體 pH 值 7，FID 值 2.3ppm，PID 測值 33ppm，08 時 05 分完成吊掛扶正作業，PID 測值 ND，經港務公司同意由拖板車拖離現場，現場無傷亡，技術小組 08 時 15 分收隊賦歸。

關鍵詞：(1)鄰甲酚、(2) ISO TANK

### Abstract

A report was received from fire-fighting team of Port of Kaohsiung:  
“Container in Harbor ○○ dropped to the ground, and powder-like chemical leak was found, the owner of the container was ○○ company, UN3455, and support from the technical team was requested.” After confirmation was made with ○○ company, it was found that the leak substance was O-cresol, which was not listed and controlled toxic substance. The technical team went on its duty at 4:50 and arrived at 5:32, the site was a turn-over of 40°C heat-insulation ISO TANK container on the road side, and the manhole of the tank body showed tiny amount of liquid leak, after using GC/MS, FTIR, Raman detector to make qualitative analysis, it was confirmed to be liquid o-cresol, meanwhile, liquid-absorption wool was used to absorb it and liquid tray was placed underneath it, moreover, it was not leaked to the road surface, and liquid had pH value of 7, FID value of 2.3ppm, PID value of 33ppm, at 8:05, the lifting operation was finished, and the PID value was ND. After an agreement from the harbor company is acquired, it was dragged out of the site by a trailer,

meanwhile, there was no injury and death on the work site, the technical team returned at 8:15.

Keywords : (1)O-cresol, (2) ISO TANK

# 臺南市○○機構疑似氯氣鋼瓶外洩事故

## Suspicious chemical leak accident at ○○ organization in Tainan City

### 一、摘要

105年05月12日09時30分接獲臺南市環保局來電洽詢，臺南市○○機構疑似化學品洩漏，為列管毒化物運作場，請求技術小組支援協助環境偵測，技術小組於11時48分依支援2號作業出勤，12時21分抵達現場，經現場勘查得知，事故點儲放氯氣鋼瓶數約有數十支，於門口處以五用偵檢器進行檢測測值為N.D.，進入儲存區逐一對氯氣鋼瓶實施偵測，發現靠近門口處一支鋼瓶測值為18 ppm，餘鋼瓶均無測值，消防於現場架設水線待命，稍後進行鋼瓶排空作業，並使用熱影像儀監控，現場約每半小時進行周界測值量測，另組裝洗滌塔以氫氧化鈉進行洗滌作業，於23時00分完成排空作業，使用五用氣體偵測門口及下風處均為N.D.，洗滌廢液pH值9，與市環保局完成善後復原會議，後續由環保局督導業者完成廢液清除作業，技術小組於13日00時10分賦歸。

關鍵詞：(1)氯氣、(2)鋼瓶

### Abstract

At 09: 30, a telephone request from the environmental protection bureau of Tainan City was received, and it was reported that there was a suspicious chemical leak at ○○ organization of Tainan City, which as a listed and controlled toxic substance operation site, therefore, it requested a support of environment detection from the technical team, then the technical team went on its duty at 11:48 according to support no. 2 operation, at 12: 21, the technical team arrived at the work site, after the site inspection, it was found that the accident site has several tens of chlorine steel bottle stored, at the entrance gate, five-purpose detector was used to detect, and the detection value was N.D., after entering the storage area, the chlorine steel bottle was detected one by one, and one steel bottle close to the entrance gate has test value of 18 ppm, and there was no test value for the rest of steel bottles, meanwhile, the fire-fighting team install water line as standby in the accident site, later on, steel bottle evacuation

operation was conducted, meanwhile, thermal image instrument was used to monitor. Peripheral test measurement was conducted every half hour on the accident site, meanwhile, scrubbing tower was assembled using NaOH for the scrubbing operation, 23:00, the evacuation operation was finished, then five-purpose gas detector was used to detect the door and the downstream site, with detection result of N.D., the scrubbing waste solution has pH value of 9. Meanwhile, a recovery meeting was finished with city environmental protection agency, later on, the environmental protection agency will monitor the supplier to finish the waste solution cleaning operation, and the technical team returned at 00:00 on 13rd day this month.

Keywords : (1)Chlorine, (2)Steel bottle

# 台南市○○港丁二烯槽車翻覆事故

## A turnover accident of the butadiene tank vehicle at ○○ harbor of Tainan City

### 一、摘要

105 年 02 月 06 日 06 時 35 分本公司承運毒化物丁二烯之曳引車 LAM-○○槽車○○-XL 司機林姓司機，由○○油倉承載丁二烯至○○公司，灌裝完成過磅後，在出廠時由於行政大樓前有另一台油罐車臨停，司機林姓司機先切入內側車道後再切出外側車道，疑因車速過快、離心力過大造成罐體與車頭連結之磨盤固定架斷裂，導致槽車於○○港區公用道路發生罐體翻覆，經南區環境專業事故技術小組抵達現場支援，確認槽體無洩漏，考量槽體重量先進行移槽再進行吊掛作業，於 16 時 43 分順利移槽結束。

關鍵詞：(1) 丁二烯、(2)槽車翻覆、(3)緊急應變

### Abstract

At 6:35 on Feb. 06, 2016, a trailer ○○○-○○ and tank vehicle ○○-○○L with driver ○○, which was a carrier for toxic substance butadiene of this company, carried butadiene from○○ Oil Storage Site to ○○ company, after filling and weighing process was finished, the vehicle prepared to went out of the plant, however, since there was a temporary stop of another oil tank vehicle close to the administrative building, driver ○○ thus cut into the inner lane of the road and then back to the outer lane of the road, however, due to its high speed, over-centrifugal force has led to the breaking of tray fixing rack, which was a connection between the tank body and the head of the vehicle, therefore, a turnover of the tank vehicle on the public road side of the ○○ harbor area occurred, then a technical team of environmental professional accident of southern Taiwan has arrived the accident site to provide support, and the tank body was confirmed to be of no leak, after considering the tank body weight, the tank was moved first, then a lifting operation was conducted, at 16:43, the tank was removed smoothly.

Keywords : (1) Butadiene、(2) Turnover of tank vehicle、(3) Emergency handling

# 彰化縣國道 1 號北上 200 公里硫酸廢液槽車洩漏事故

## Leak accident of waste sulfuric acid tank vehicle at northbound 200 km location of national highway number one at Chunghwa County

### 一、摘要

105 年 04 月 07 日，本公司周姓司機駕駛○○-ZV 曳引車聯結槽罐車(車牌號碼○○-3F) 至南科廠載運回收廢硫酸(代碼：C-0202)，於 03 時 40 分離廠前往台中港廠卸料，05 時 05 分時行經國一北上 199.2K 處，因閃避不及與前方全貨車脫落在路面上滾動之輪胎對撞，因而造成車輛失控，曳引車翻覆於護欄上、槽車翻落斜坡邊、槽車卸料管及回氣管斷裂，有少量回收酸外洩。

關鍵詞：(1)廢硫酸、(2)槽車翻覆

### Abstract

In April 27, 2016, Zhou Chengkan, one of the drivers of Zhongxin Transportation Co., Ltd., drived tractor (273-ZV) with connection of semi-trailer tank (08-3F) to (STSTP)Southern Taiwan Science and Technology Park for carrying waste recycling sulfuric acid (code: C-0202), and transport to Taichung Harbor factory of the Beaming Co., Ltd. It happened in Zhongshan Expressway about 199.2 kilometers north at 05:05, There came straightly a set of evaded tire from the former car and . This accident made the vehicle out of control, the tank overturned on the fence and the semi-trailer fell down on slope side of the road. And there were litter of leaking of waste recycling sulfuric acid

Keywords : (1)SA: waste recycling sulfuric acid 、(2)tank overturned

# 桃園市國道 1 號接台 66 線硫酸洩漏事故

## Sulfuric leak accident at the site of national highway no. 1 connected to line 66 at Taoyuan City

### 一、摘要

此事故發生於 104 年 12 月 25 日，載運硫酸之海鷗車於國道 1 號北上接台 66 線往觀音方向行駛，疑似過彎時車速過快，造成車內桶槽掉落及傾倒。○○公司應變人員以消防砂吸附洩漏之化學品，技術小組人員進行現場環境偵檢。○○公司新派貨車抵達現場並使用堆高機進行桶槽搬運換車作業並清除吸附之消防砂、回收廢液及汙染之土壤。環保局督導業者完成後續處理。

關鍵詞：(1)硫酸、(2)環境偵檢

### Abstract

This accident occurred in December 25 2015, a seagull vehicle carrying sulfuric acid headed its way towards Guanyin at national highway no. 1 northbound and connected to Tai-66 line, a suspicious over-speed at turning site had let to the dropping and dumping of tank on the vehicle. The emergency handling personnel of ○○ company has used fire-fighting sand to adsorb the leaked chemical, then technical personnel conducted on-site environment detection. The newly assigned truck of ○○ company arrived the accident site and used forklift to make transport and vehicle transfer operation on the tank, meanwhile, the adsorbed fire-fighting sand, recycled waste liquid and contaminated soil were removed. The environmental protection agency should monitor the supplier to finish the subsequent processing.

Keywords : (1)Sulfuric acid、(2)environment detection

# 基隆市基隆港東 9 碼頭○○貨櫃場氫氟酸洩漏事故

## HF leak accident in the ○○ container site of East 9 harbor of Keelung Port of Keelung City

### 一、摘要

105 年 05 月 27 日接獲基隆港務消防分隊通報：「23 時 14 分接獲港警總隊報案，東 9 碼頭○○貨櫃場有無水氫氟酸洩漏，UN 號碼為 1052。」23 時 48 分消防請求支援，技術小組 23 時 59 分依支援 3 號作業出勤，00 時 39 分抵達，為 20 公噸 ISO TANK，濃度 99.98%無水氫氟酸，貨主為○○化工，04 時 55 分由業主完成止漏，確認為閥件未關緊盲板處洩漏，除污廢水約 1 噸，pH 值 7，槽體吊離運送至觀音廠，完成現況討論，技術小組 05 時 50 分賦歸，非毒化物運作場所，為一般化學品洩漏事故。

關鍵詞：(1)氫氟酸、(2)ISO TANK、(3)基隆港

### Abstract

In May 27, 2016, a report from the harbor fire-fighting bureau of the Keelung Harbor was received: "At 23: 14, a report from harbor police headquarters was received, there was anhydrous HF leak in ○○ container site of east 9 harbor, UN number is 1052". At 23: 48, fire-fighting department asked for support, the technical team went on its duty based on support no. 3 operation at 23: 59, at 00:39, it has arrived, and it was found to be 20 tons ISO TANK, with concentration 99.98% anhydrous HF, meanwhile, the owner was ○○ chemical corporation., at 04: 55, the leak has been stopped by the owner, and it was confirmed to be loose valve and a leak was from the blind plate, meanwhile, the waste water generated was about 1 ton with pH value of 7, the tank body was lifted and transported to Guanyin plant, then the site situation discussion was finished, the technical team returned at 05:50, meanwhile, it was not toxic substance operation site, therefore, it was leak accident of general chemical.

Keywords : (1)HF、(2)ISO TANK、(3)Keelung Harbor