The Occupation and Environment Related Respiratory Diseases and Notification System in Taiwan.

職業與環境相關的呼吸系統疾病與台灣的職 業病通報制度

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Outlines

- Occupation and Environment Related Respiratory Diseases in Taiwan
  - Pneumoconiosis- Silicosis
  - Work-related Asthma
  - Asbestosis
- Occupation and Environment Related Lung Cancers
  - Mesothelioma
  - Ni-induced lung cancer
- Notification System in Taiwan

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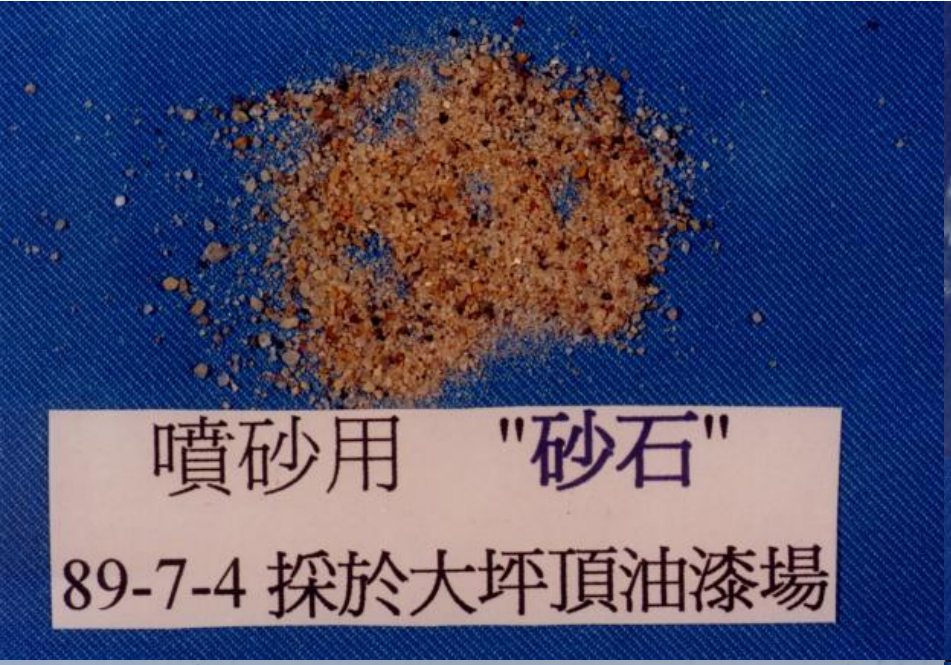
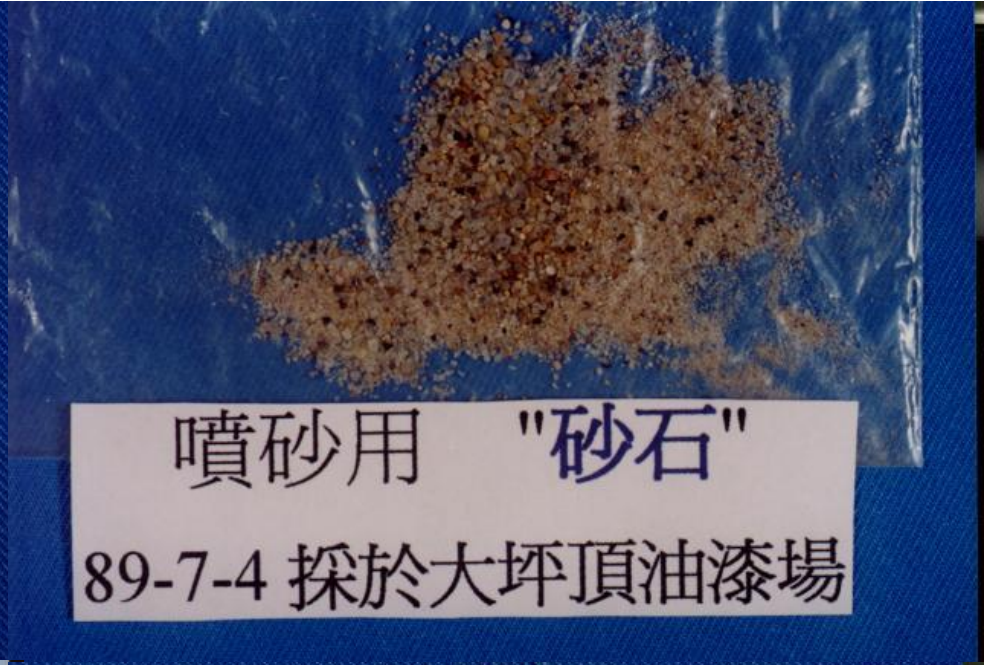
塵肺症常居我國職業病給付排行榜。引起塵肺症最主要的原因之一，為吸入結晶型游離二氧化矽粉塵，結晶型游離二氧化矽包含石英、鱗矽石、方矽石等三種物質，自然界常見者為石英。二氧化矽粉塵沈積於肺泡中會造成肺部纖維化產生無法治癒之病變。

Pneumoconiosis- Silicosis

Sand blasting (噴砂)


噴砂用 "砂石"
89-7-4 採於大坪頂油漆場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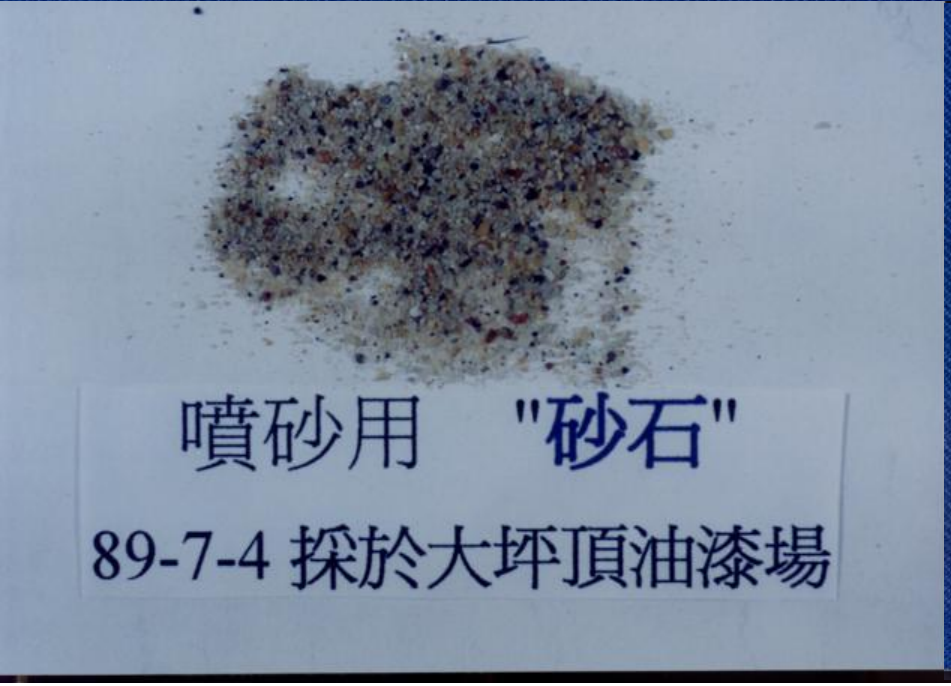
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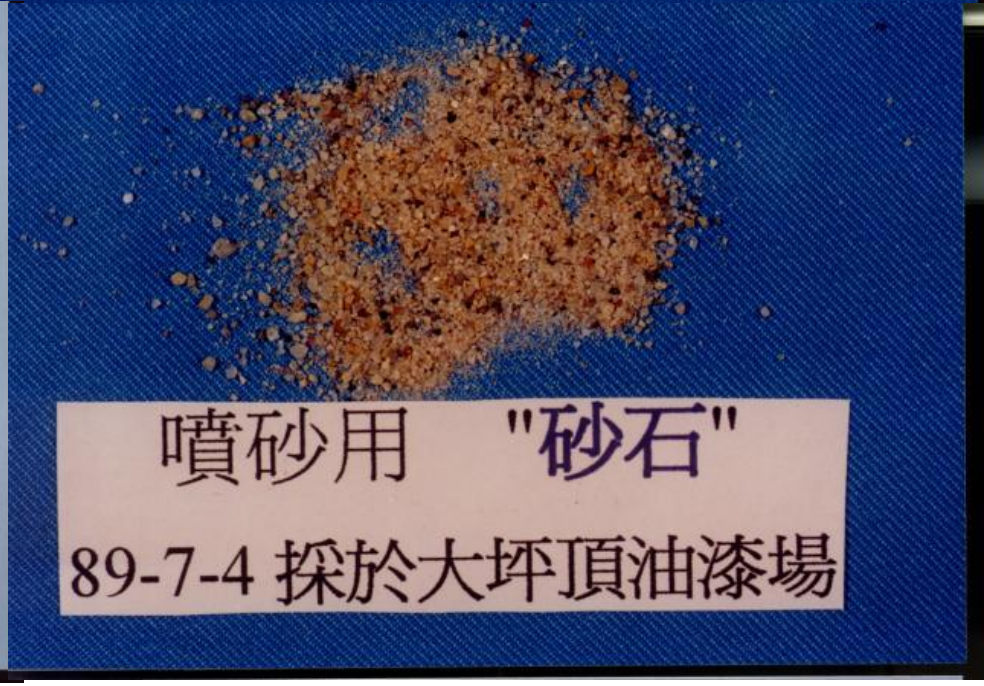
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Most Frequently Reported Specific Causes or Contributors to Work-Related Asthma

- Diisocyanates
- Stainless steel welding plume
- Formaldehyde
- Paint
- Pesticides
- Natural Rubber Latex
- Chlorine
- Glutaraldehyde
- Diesel exhaust
- Epoxy resins
- Acrylates
- Wood dust

- …(continued)

Risks of Exposure to Occupational Asthmogens in Atopic and Nonatopic Asthma

A Case-Control Study in Taiwan

Am J Respir Crit Care Med Vol 182. pp 1369–1376, 2010

Tsu-Nai Wang[1,2*], Meng-Chih Lin[3*], Chao-Chien Wu[3], Sum-Yee Leung[3], Ming-Shyan Huang[4], Hung-Yi Chuang[1,5], Chien-Hung Lee[1], Deng-Chyang Wu[6], Pei-Shan Ho[7], Albert Min-Shan Ko[2], Po-Ya Chang[2], and Ying-Chin Ko[2,8]

Rationale: Asthma is often work-related and can be classified as atopic or nonatopic on the basis of its pathogenesis. Few studies have reported an association between exposure to occupational asthmogens and asthma with and without atopy.

Objectives: We investigated, in adults with asthma, whether occupational exposure to asthmogens influenced the risk of having atopic or nonatopic asthma, and their level of lung function.

Methods: We recruited 504 hospital-based adults with current asthma, 504 community-based control subjects, and 504 hospital-based control subjects in southern Taiwan. Asthma with atopy was defined as having asthma in combination with an increase in total IgE (≥100 U/ml) or a positive Phadiatop test (≥0.35 Pharmacia arbitrary unit/L) (Pharmacia ImmunoCAP; Pharmacia, Uppsala, Sweden). Occupational exposure to asthmogens was assessed with an asthma-specific job exposure matrix.

Measurements and Main Results: We found a significant association between atopic asthma and exposure to high molecular weight asthmogens (adjusted odds ratio [AOR], 4.0; 95% confidence interval [CI], 1.8–8.9). Nonatopic asthma was significantly associated with exposure to low molecular weight asthmogens (AOR, 2.6; 95% CI, 1.6–4.3), including industrial cleaning agents and metal sensitizers. Agriculture was associated with both atopic and nonatopic asthma (AOR, 7.8; 95% CI, 2.8–21.8; and AOR, 4.1; 95% CI, 1.3–13.0, respectively). The ratio of FEV_1 to FVC in the high-risk group was significantly lower than in the no-risk group ($P = 0.026$) in currently employed patients with asthma.

Conclusions: In adults with asthma, occupational exposure to high and low molecular weight asthmogens appears to produce differential risks for atopic and nonatopic asthma.

AT A GLANCE COMMENTARY

Scientific Knowledge on the Subject

Few studies have reported an association between exposure to comprehensive occupational asthmogens and atopic and nonatopic asthma.

What This Study Adds to the Field

We used a case–control study to assess the effects of occupational exposure across the entire spectrum of jobs. Occupational exposure to high molecular weight asthmogens and low molecular weight asthmogens may pose different risks for atopic and nonatopic asthma.

Job Exposure Assessment

Physical examination and a questionnaire, including previous and current job history and environmental factors, were completed at the time of visiting a physician. Occupational exposures were estimated for the current or most recent job code (24) and assessed by trained interviewers. Government occupational hygienists performed the expert step according to the published method (17). Our study used the asthma-specific JEM developed by Kennedy and colleagues (17). The JEM has 22 exposure groups, including 18 high-risk groups, based on known risk factors (referred to here as "asthmogens") for occupational asthma, grouped into high-MW agents, low-MW agents, and mixed environments (*see* Table E1). The "no-risk group" means that the study subjects are unlikely to be exposed to substances associated with a risk of asthma or to other irritating chemicals. The "low-risk group" consists of patients with low levels of exposure to irritant chemicals (no high peak exposures), exhaust fumes, and environmental tobacco smoke (17, 18). The tables display the results for a specific exposure if there were at least five patients and four control subjects for that exposure, and the numbers of exposed subjects in both case and control groups are shown in Table E1.

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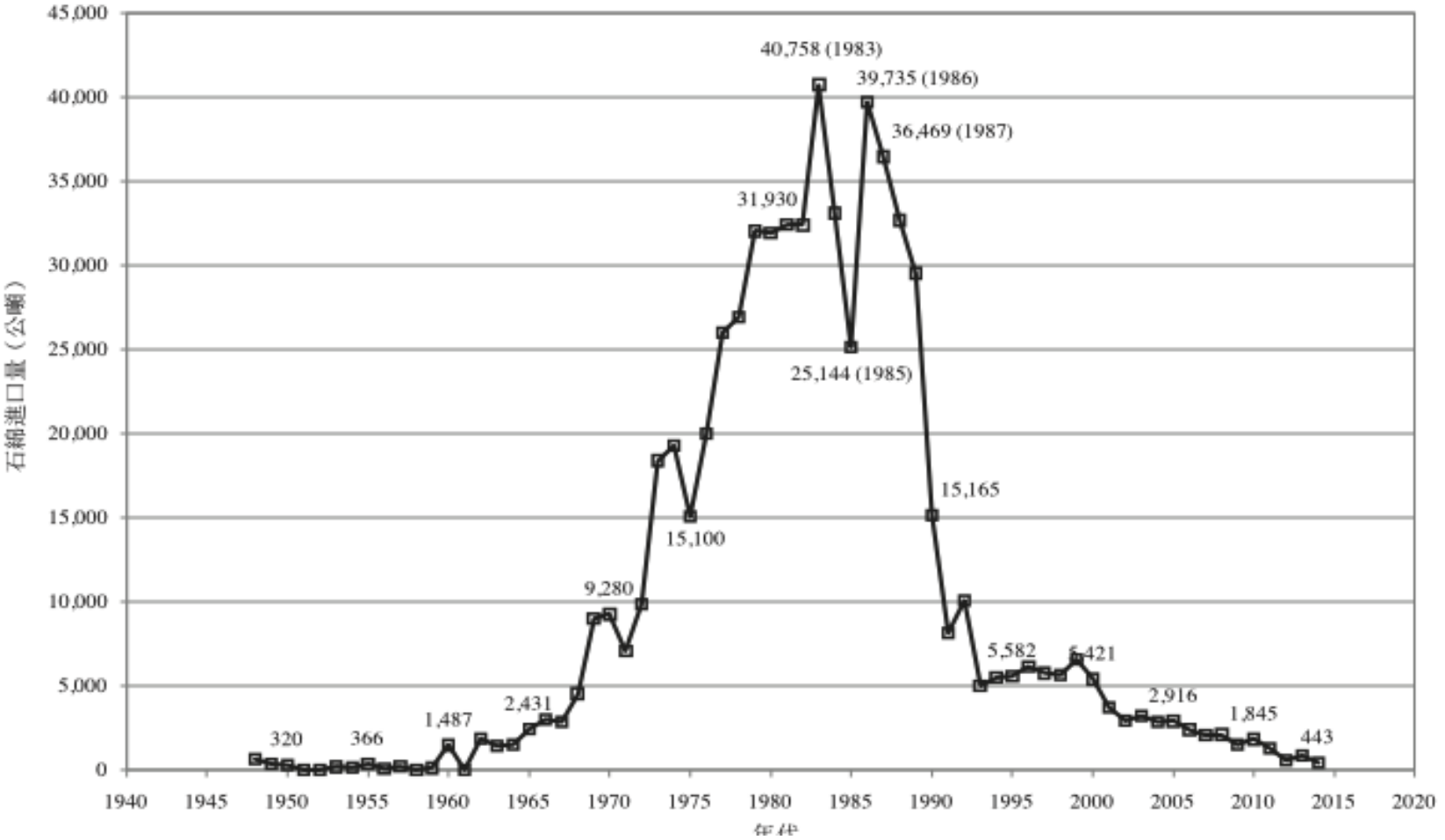
Asbestos Used in Taiwan, 1948-2015

Taiwan asbestos baned in 2018/01/01.



財政部關務署統計資料庫查詢系統
https://portal.sw.nat.gov.tw/APGA/GA01.　製圖者:李俊賢醫師

KMUH石綿個案院內轉介流程

胸腔內科 | 胸腔外科 | 病理部

↓

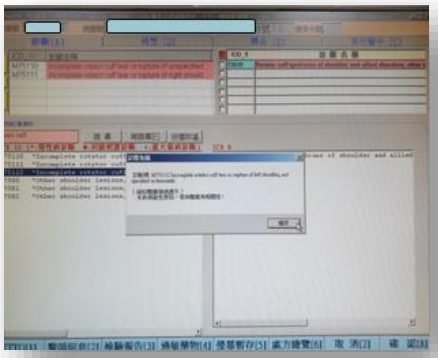
門診提示系統 | 住院照會系統 | 簡訊通知

↓

職業傷病防治中心

↓

排除 | 確診



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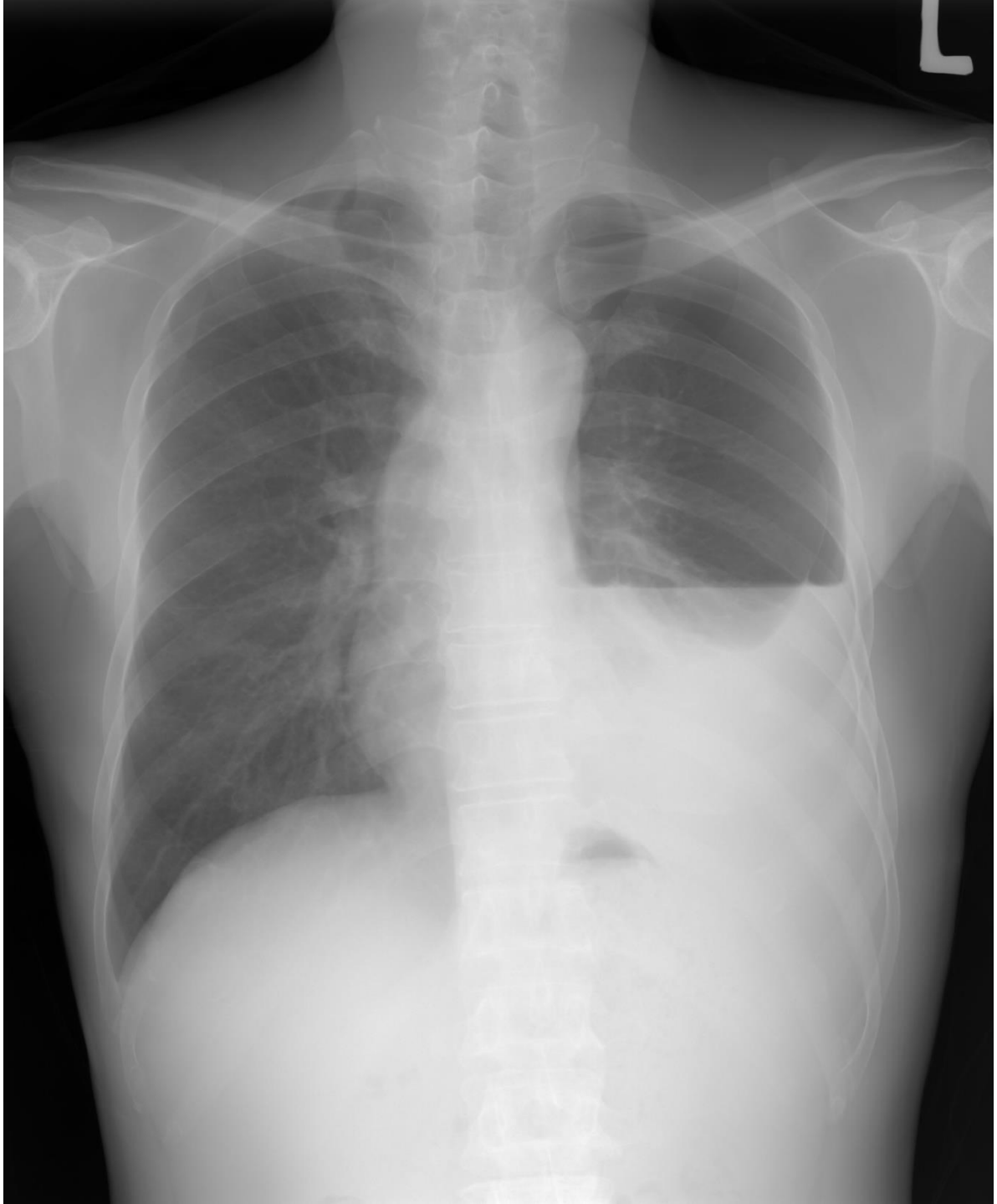
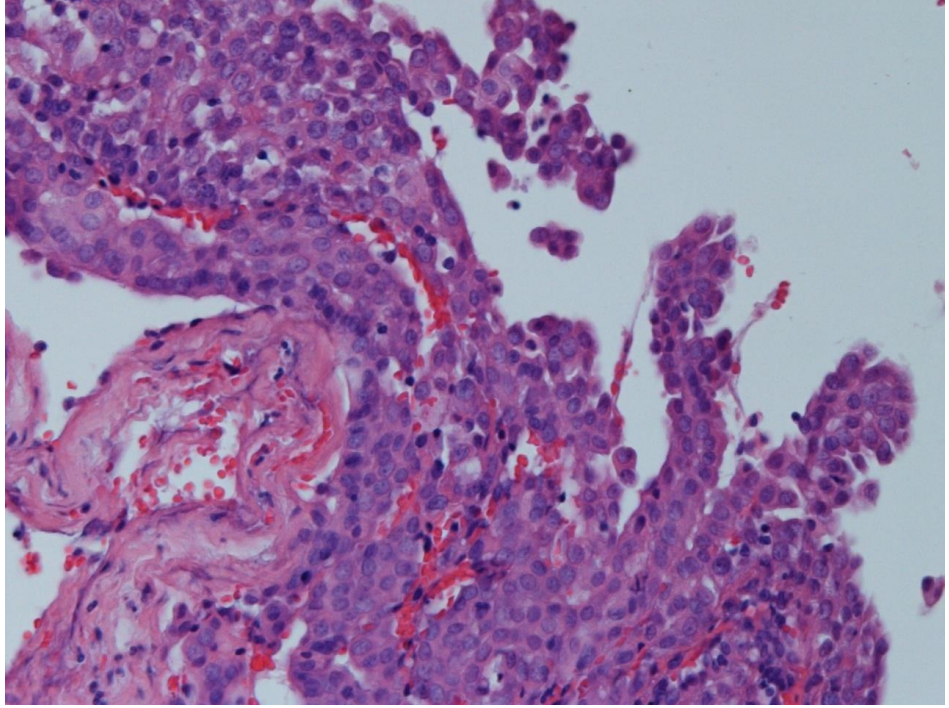
Asbestos-related Pleural Plaques and Malignant Mesothelioma: Two Case Reports and Literature Review

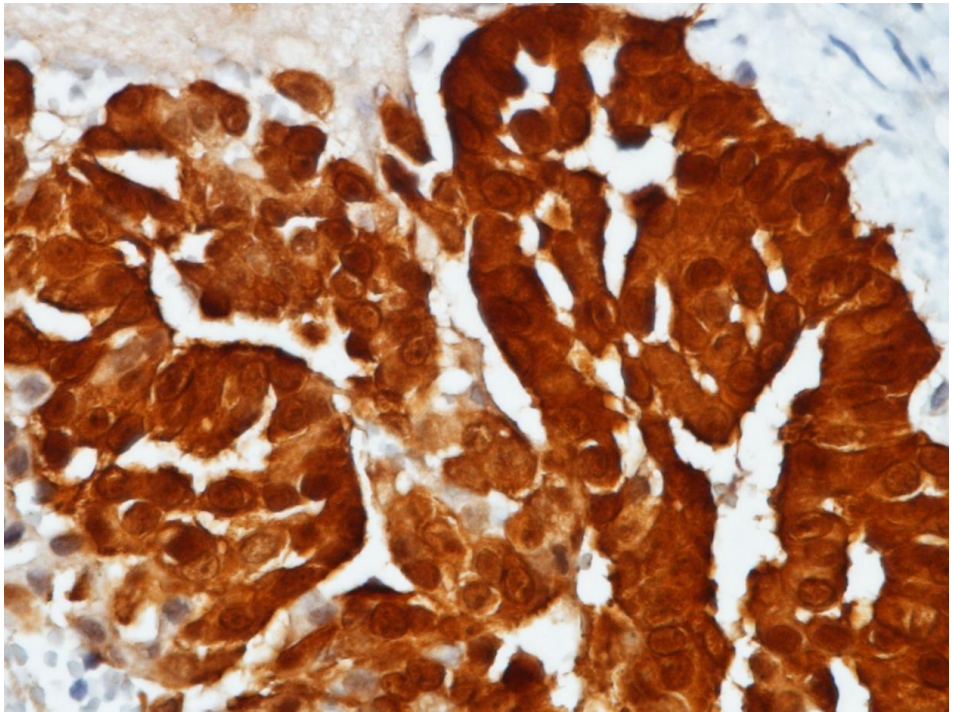
Yung-Cheng Huang[1], Yu-Yin Lin[1], Yi-Ting Chen[2], Chao-Ling Wang[1] and Hung-Yi Chuang[1,3]

Asbestos has been found to induce lung diseases, nobtably malignant mesothelioma, lung cancer, asbestosis, pleural plaques, and diffuse pleural thickening. We reported two cases of asbestos-related lung disease. One had malignant mesothelioma and the other was diagnosed with pleural plaque. The first case was a 62-year-old woman who suffered from chest pain, shortness of breath, and productive cough for 1 week. Chest X-ray revealed considerable right-sided pleural effusion, and pleural biopsy later confirmed the diagnosis of malignant mesothelioma. She had worked as a flame cutter in the ship-breaking industry for 7 years in Kaohsiung since she was 19 years old. The second case was a 72-year-old man reporting no previous chest discomfort. Bilateral pleural plaques were found accidentally when he was admitted to the hospital due to acute pancreatitis. Both chest radiography and computed tomography showed bilateral calcified pleural plaques. He had worked in pipe insulation business for 40 years since he was 24. The two cases have no longer in direct occupational exposure to asbestos for approximately 30-40 years. We performed literature review on pleural plaque, malignant mesothelioma, and the relationship between the two diseases. In spite of the fact that asbestos has been progressively banned, family physicians should continue paying attention to inquiring into previous hisotry about occupational exposure to asbestos because previous exposure to asbestos, even a distant one, may still raise the risk of asbestos-related diseases due to its long latent period. Family physicians are therefore advised to make inquiry into a patient's work experience and occupational exposure to asbestos as an essential part of their assessment and diagnosis. In addition, competent authorities should take the initiative to help patients with asbestos-induced diseases apply for workers' compensation.

(Taiwan J Fam Med 2015; 25: 157-164) *DOI: 10.3966/168232812015062502006*

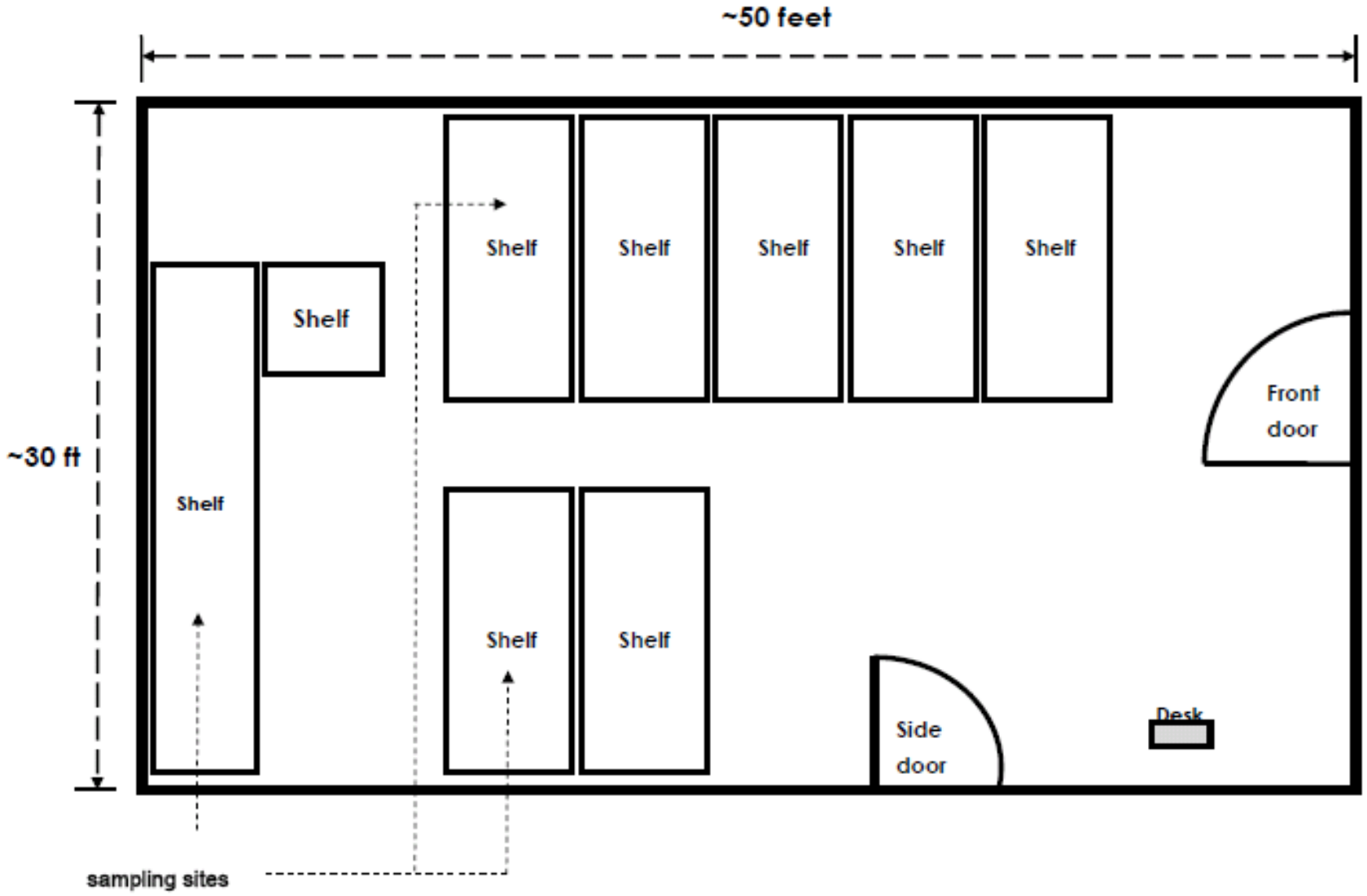


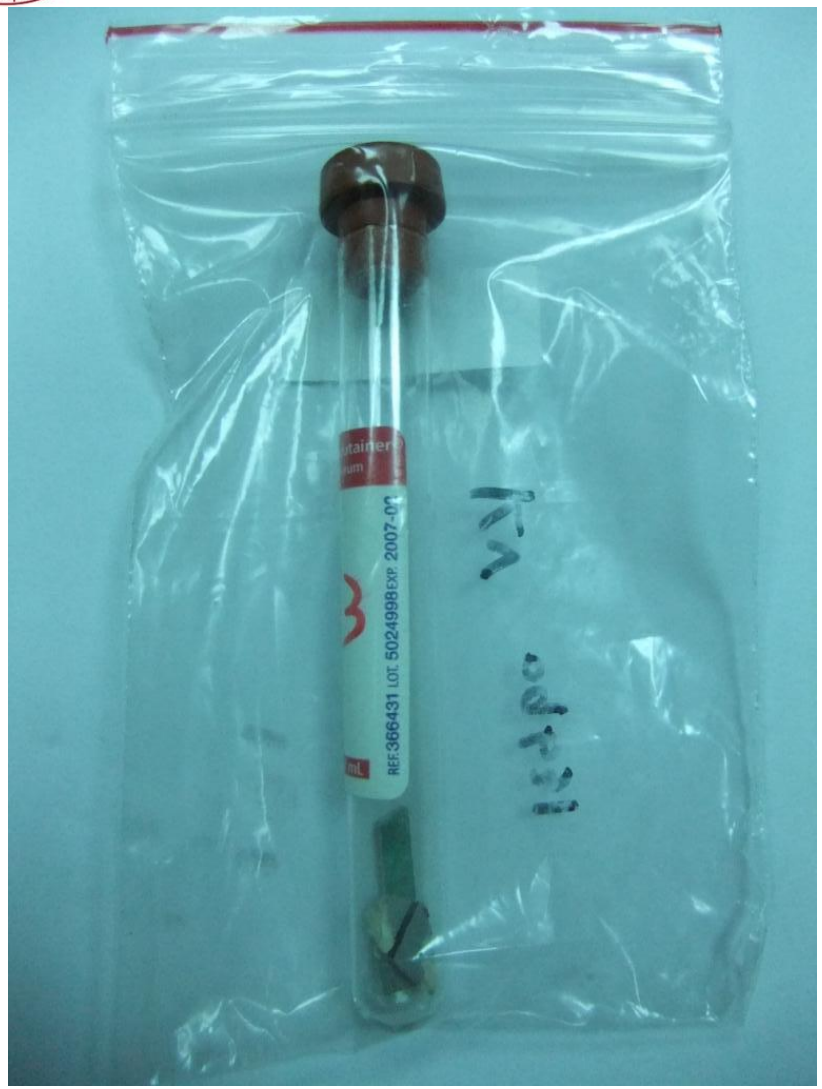




Calretinin stain
(Immunohistochemistry)

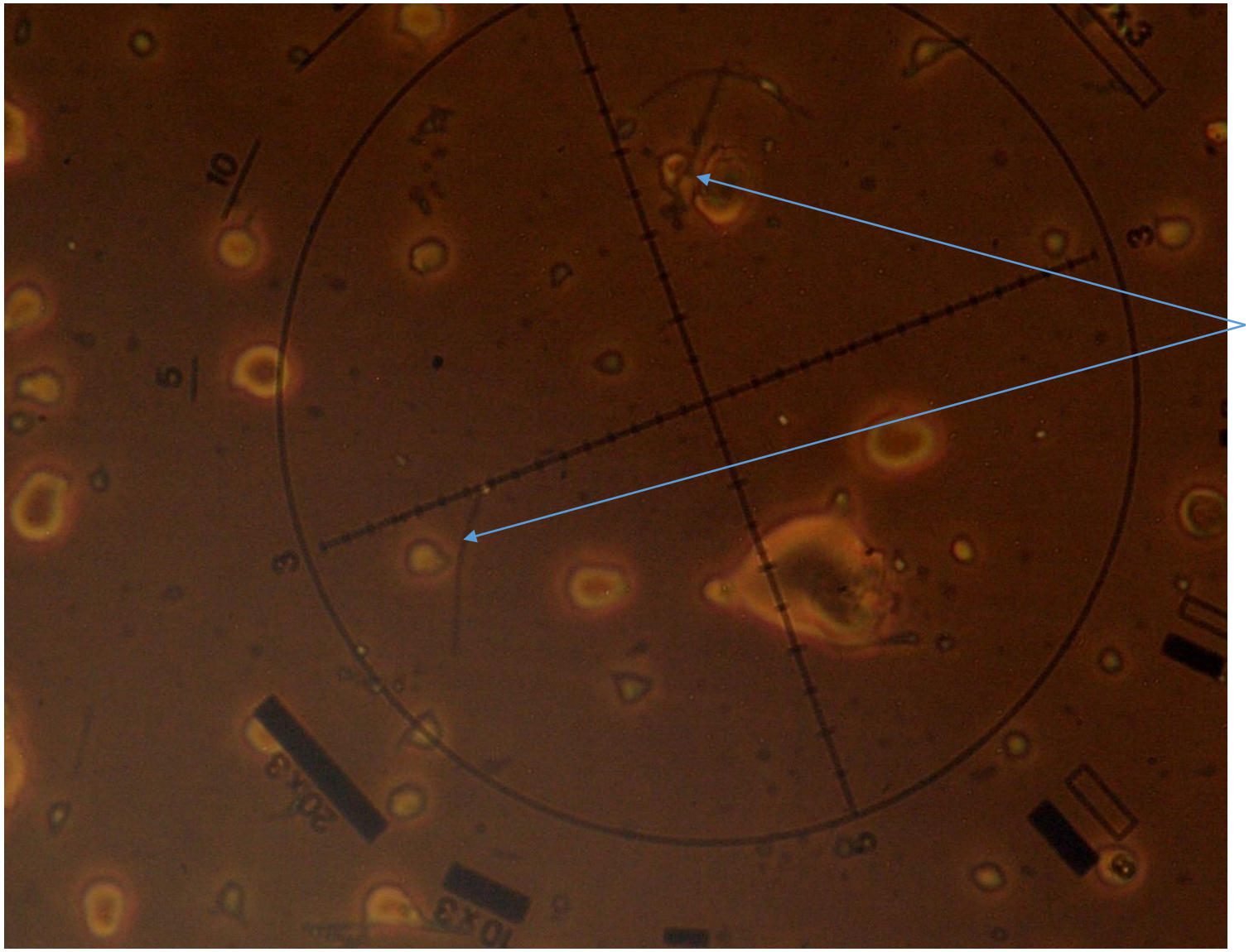
We collected dust samples from this warehouse.



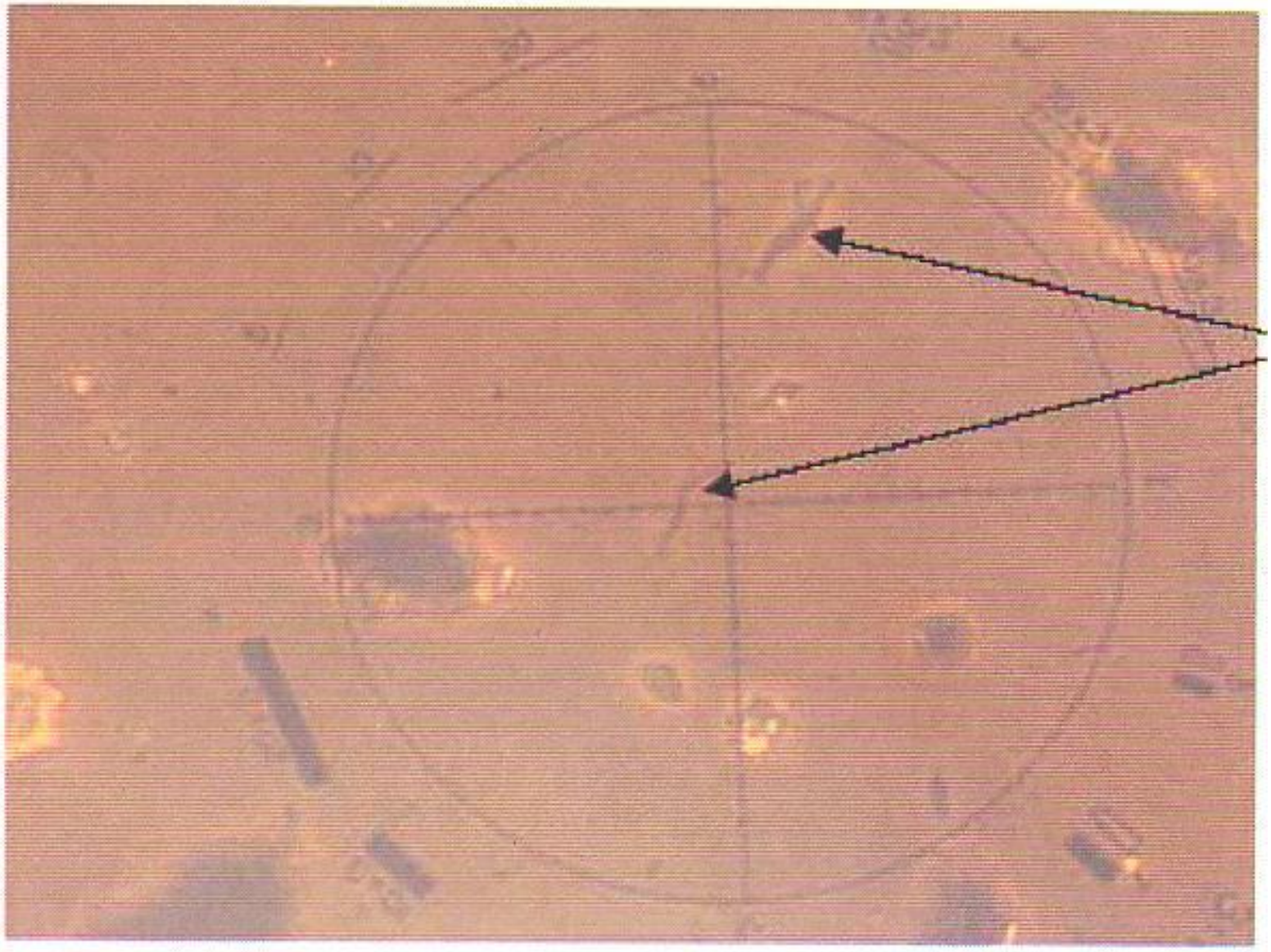

REF 366431 LOT 5024998 EXP 2007-02
7 mL


Serum
7 mL
BD, Franklin Lakes, NJ STERILE 8016387
7 mL

Standard



Olympus CH2 phase contrast microscopy 40*10=400X



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Cluster of Lung cancer in Ni Workers

三位員工皆在台灣唯一家鎳的精煉廠工作長達25~30年之後罹患肺腺癌。Patient 1於2010年經高醫診斷疑職業性肺癌後經勞委會職業病鑑定委員會鑑定為職業性鎳粉塵暴露引起之肺癌。本院職業醫學科門診於2014年9月診斷其同事patient 2也是職業性鎳粉塵暴露引發之肺癌個案，經過與兩位個案訪談發現於2008年間，有另一位同事patient 0已經因為肺癌而過世，推測可能也是因為職業性鎳粉塵暴露而引起之肺癌。

Patient 1

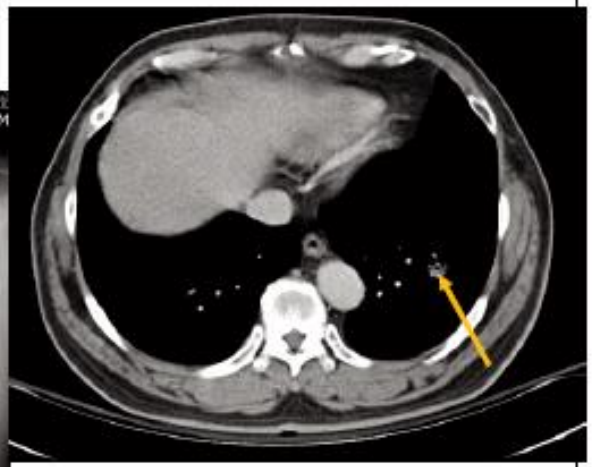
出生於民國 41 年 5 月，自民國 66 年至民國 72 年於煉鋁業工作，工作內容為操作、保養及維修天車。自民國 73 年 6 月 1 日開始在鎳的精煉廠工作，於民國 98 年 12 月因腹部不適接受腹部電腦斷層檢查後，意外於左下肺葉發現肺部腫瘤，直到民國 99 年 3 月 13 日因為肺癌發病無法回去工作，總共從事鎳金屬冶煉之工作達 26 年。

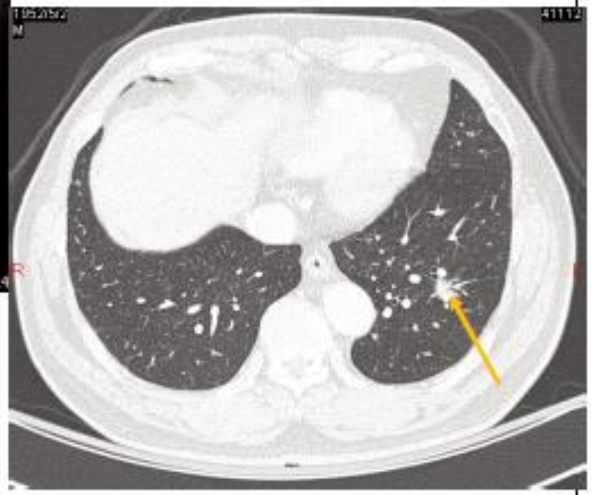
Patient 1

99 年 3 月在高雄榮民總醫院胸部電腦斷層檢查之後(如下圖)，接受左下肺葉部分切除。依據高雄榮民總醫院病歷摘要、手術記錄、與病理報告顯示，詹君權患左下肺肺腺癌，腫瘤大小 2.2 公分，並無局部淋巴結轉移之情形，亦無腦部與骨頭其餘全身轉移，癌症分期為 T1b N0 M0, stage IA。

Patient 1

系統性疾病，家人沒有肺癌的案例發生。早期每天抽 1/2 包菸，抽了 22 年，在戒煙 12 年之後發生肺癌。





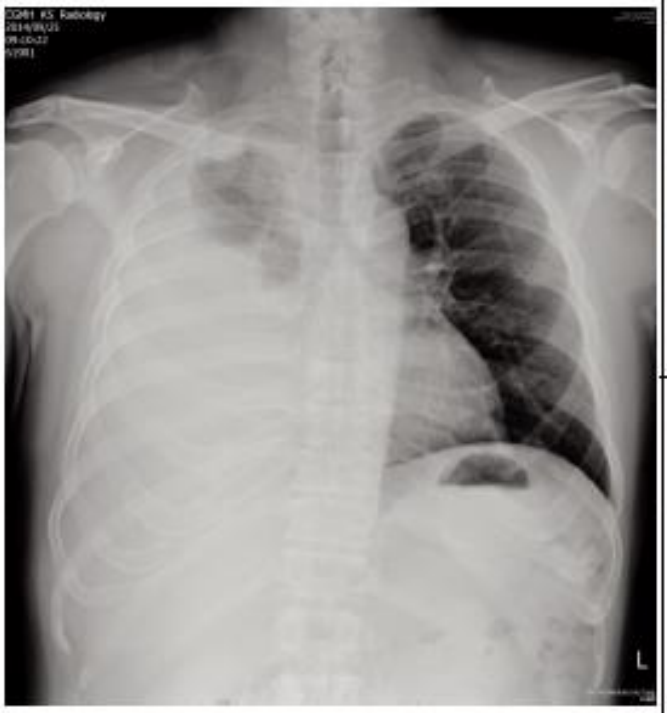
Patient 2

出生於民國 47 年 6 月，自民國 73 年 6 月 25 日開始任職於鎳的精煉廠，直到民國 103 年 9 月 30 日因為肺癌發病無法回去工作，總共從事鎳金屬冶煉之工作達 30 年。

依據個案自述與高雄長庚醫院病歷摘要、影像檢查與病理報告顯示：個案自民國 103 年 8 月開始有咳嗽與運動時會喘的情形，因此到長庚醫院胸腔內科門診檢查，胸部 X 光(如下圖)發現有大量右側的肋膜積水，經過胸水引流、肋膜切片、胸部電腦斷層(如下圖)、腦部核磁共振與全身骨骼掃描等檢查後，診斷個案罹患右上肺肺腺癌，腫瘤大小 2.5 公分合併侵犯臟層胸膜，對側縱膈腔淋巴結轉移，無腦部與骨頭其餘全身轉移，癌症分期為 T2 N2-3 M1a, stage IV。於民國 103 年 10 月 23 日開始接受肺癌標靶藥物(Tarceva)治療。

Patient 2

有高血壓與糖尿病病史，並接受藥物控制，家人沒有肺癌的案例發生，過去抽煙的情形為當兵時曾經每天抽 1/2 包抽了約 2 年，在戒煙 30 年之後發生肺癌。

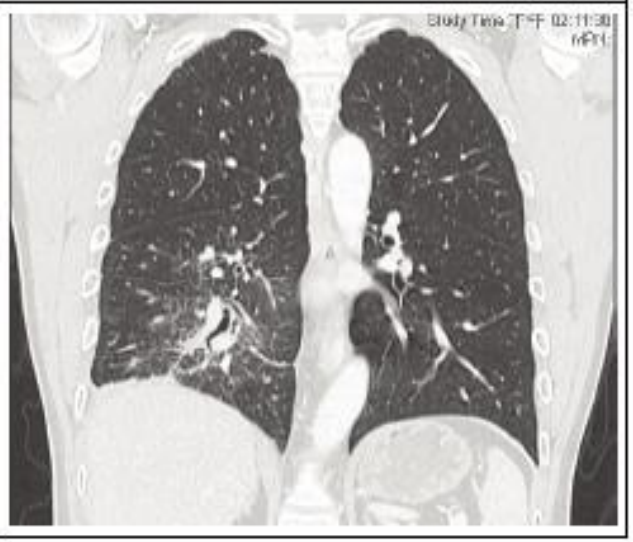


Patient 0

出生於民國 48 年 2 月，自民國 72 年開始於鎳的精煉廠工作，直到民國 97 年無法回去工作，總共在台灣鎳業工作達 25 年。

依據高醫附設醫院與台北榮民總醫院病歷摘要顯示: 個案自民國 96 年 12 月開始有咳嗽的情形，因此先後到高醫與台北榮總醫院胸腔內科門診檢查，經胸部 X 光、電腦斷層檢查(如下圖)發現多發性右下肺葉腫塊合併肋膜積水，經支氣管鏡切片檢查診斷肺腺癌，腦部核磁共振發現左側丘腦處有腫塊(疑似腦部轉移)，癌症分期為 T3N0M1, stage IV。於民國 97 年 1 月開始接受肺癌化療與標靶藥物治療。

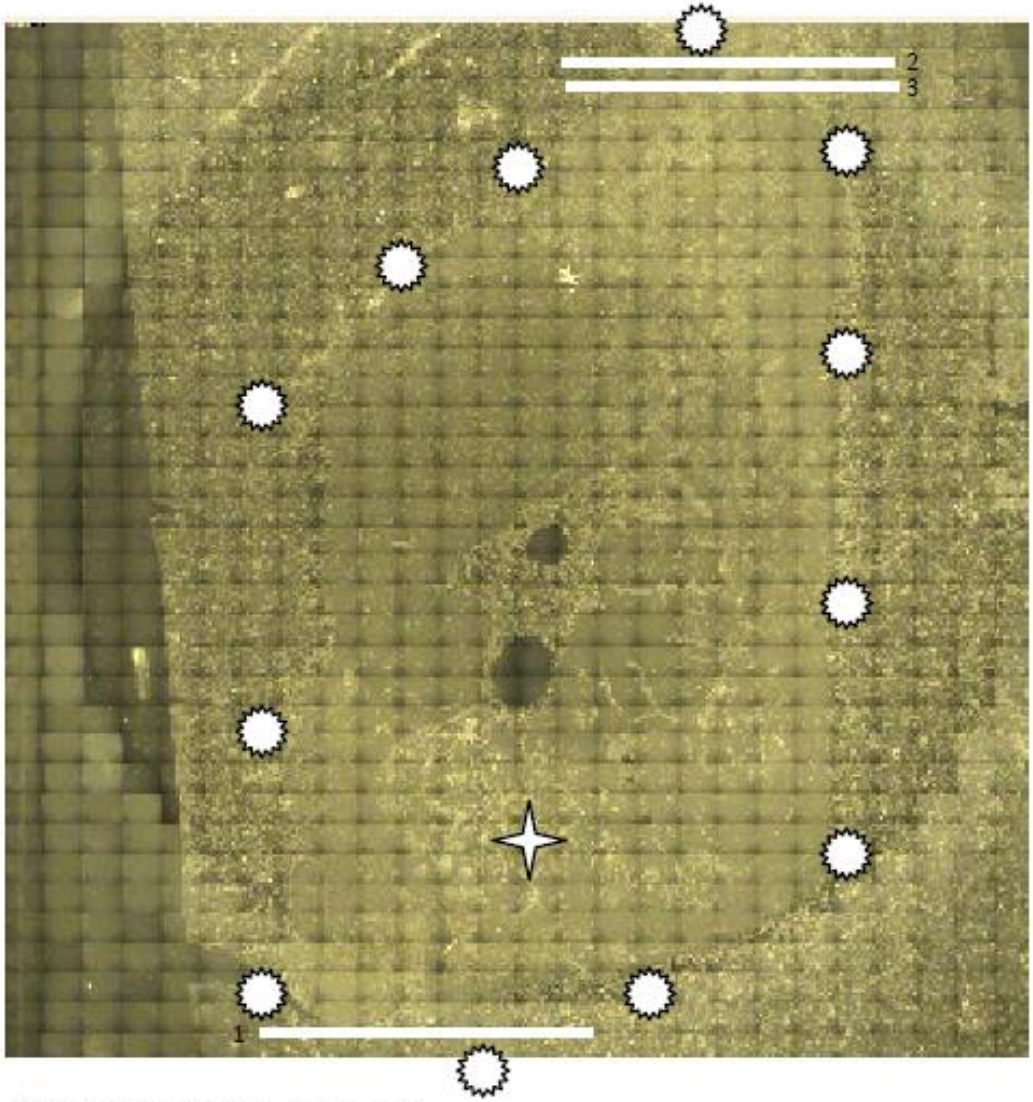
Patient 0 無系統性疾病，家人沒有肺癌的案例發生，偶爾會有社交式的抽菸。



Biomarker

- 將patient 1之肺臟病理切片，以LA-ICP-MS (Laser Ablation Inductively Coupled Plasma Mass Spectrometry)分析肺臟中的金屬含量，結果顯示肺臟中數個切線上，都可以發現相當顯著的鎳金屬訊號，且鎳金屬訊號和鈷金屬訊號呈現一致。
- 由於氧化鎳礦內會含有相當的鈷，因此，鎳與鈷訊號一致性可以提供強烈證據顯示patient 1肺臟中的鎳是由冶煉氧化鎳礦的過程中所吸入的粉塵所造成。

檢體全貌 (10x)



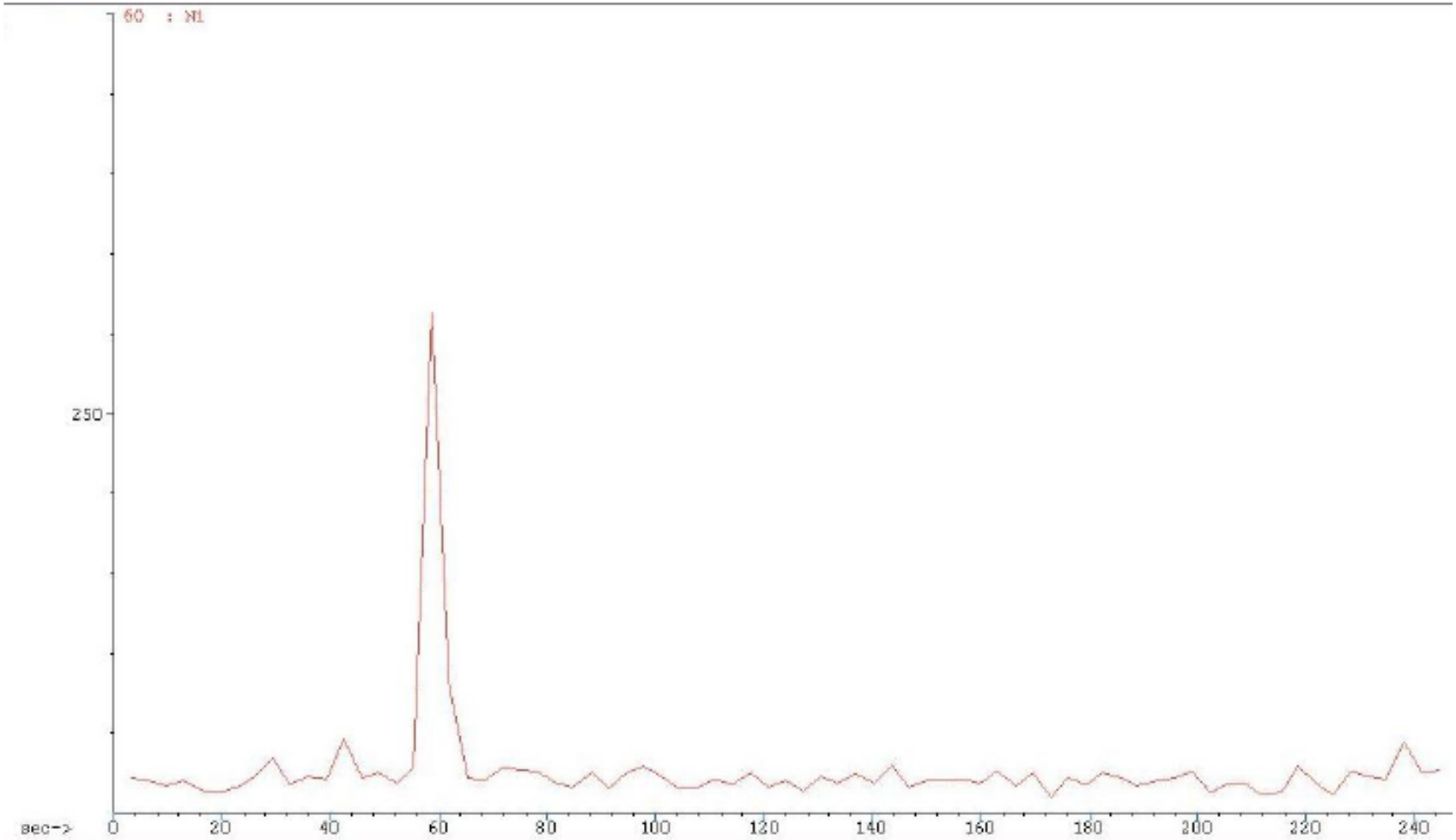
肺臟腫瘤所在位置

所圍出的區域為肺臟的檢體的大小區域

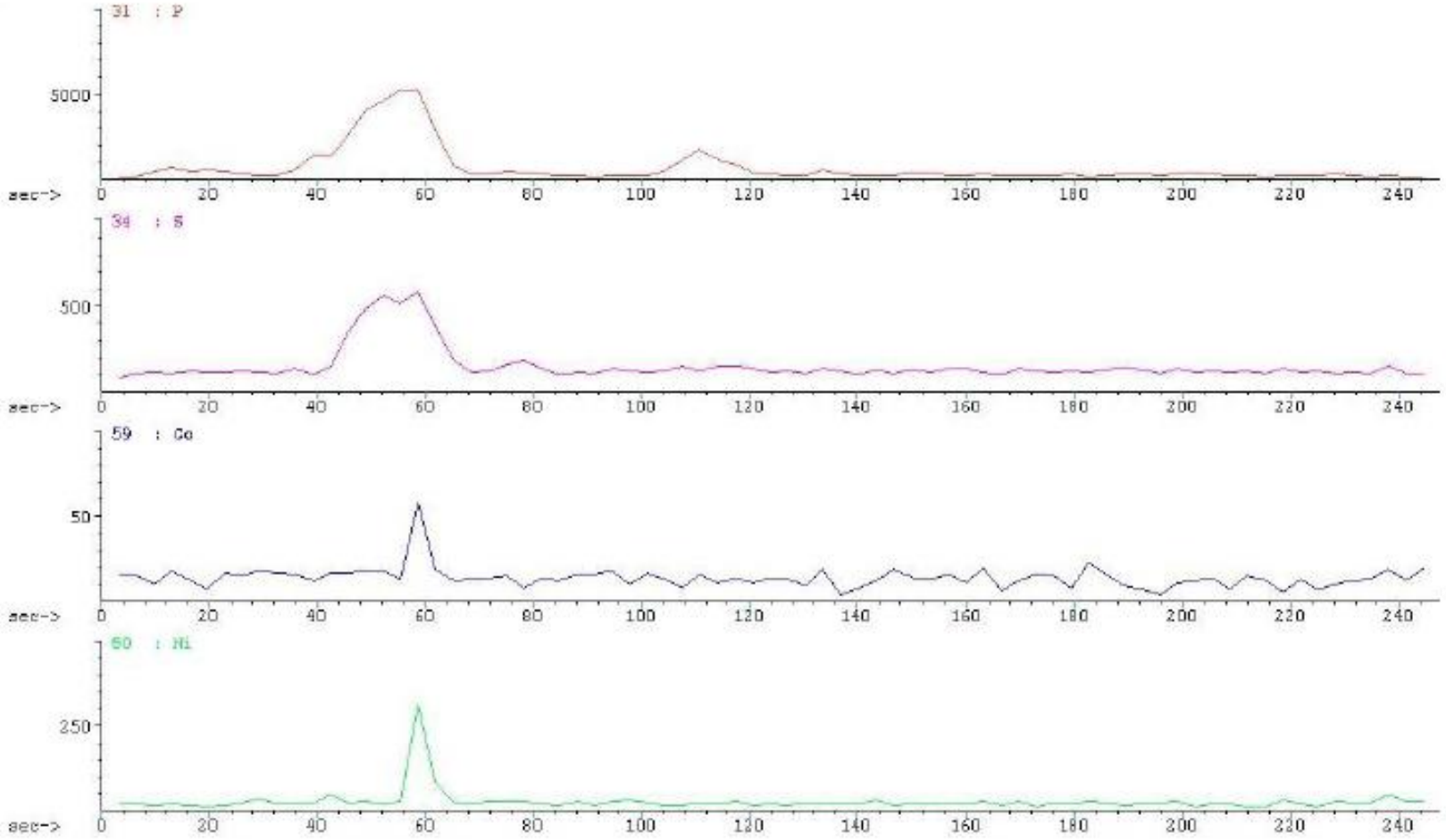
1,2,3 分別為以 LA-ICP-MS 分析的切線位置

切線一 (雷射切割速率 100 μm/sec)

(圖一：切線一中可以發現有明顯的鎳訊號)

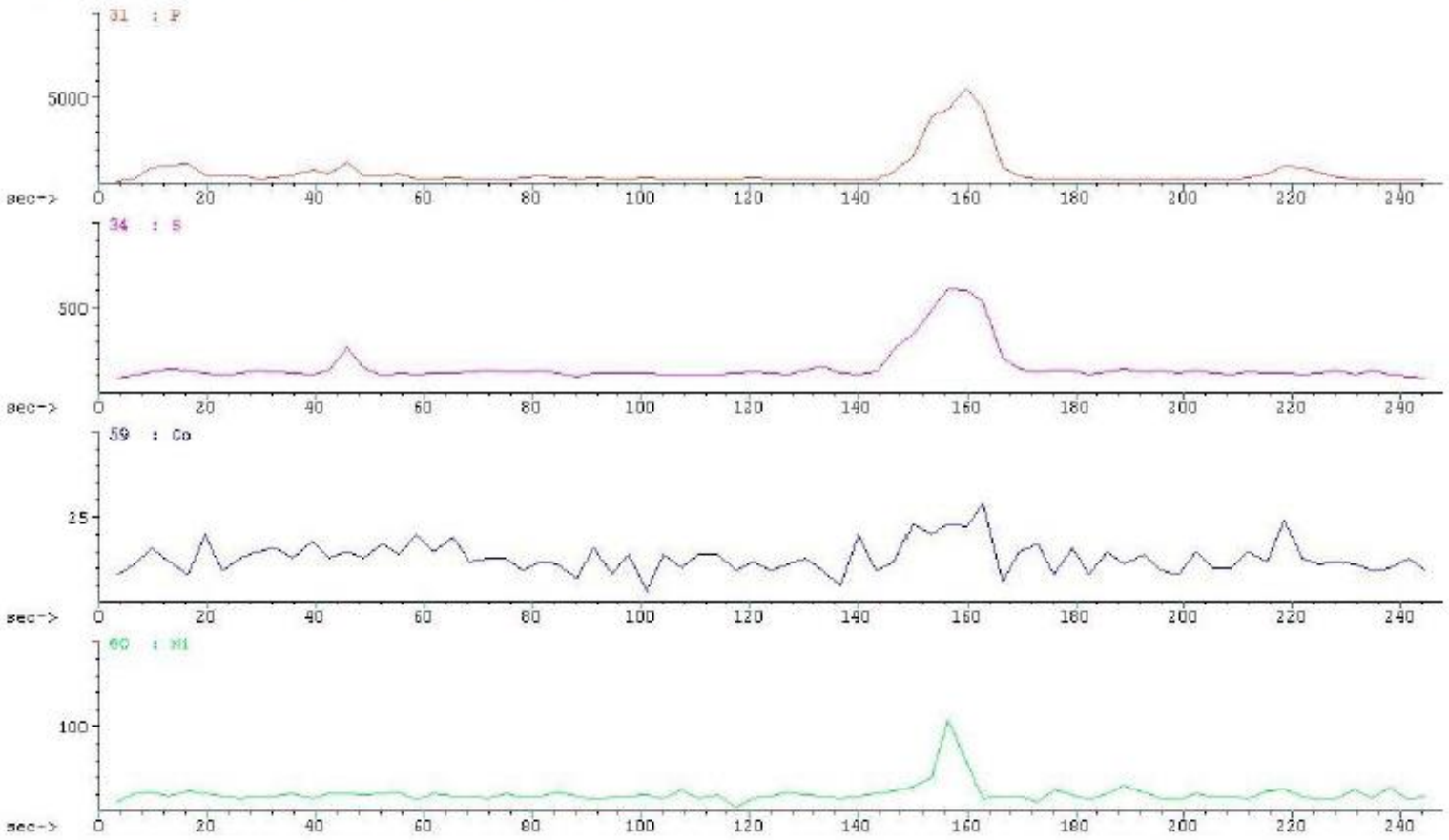


(圖二：第一條圖線代表磷 P 的訊號，第二條圖線代表硫 S 的訊號，第三條圖線代表鈷 Co 的訊號，第四條圖線代表鎳 Ni 的訊號。由磷與硫的訊號區域可以代表為肺臟檢體所在區域，磷與硫沒有高的區域為石蠟區。於 40s~64s 與 104~120s 的位置為肺組織所在處鈷與鎳的訊號於有顯著上升，且出現的位置一致，且都位於肺臟組之區域內。代表肺臟組織中含有明顯上升的鎳與鈷。)



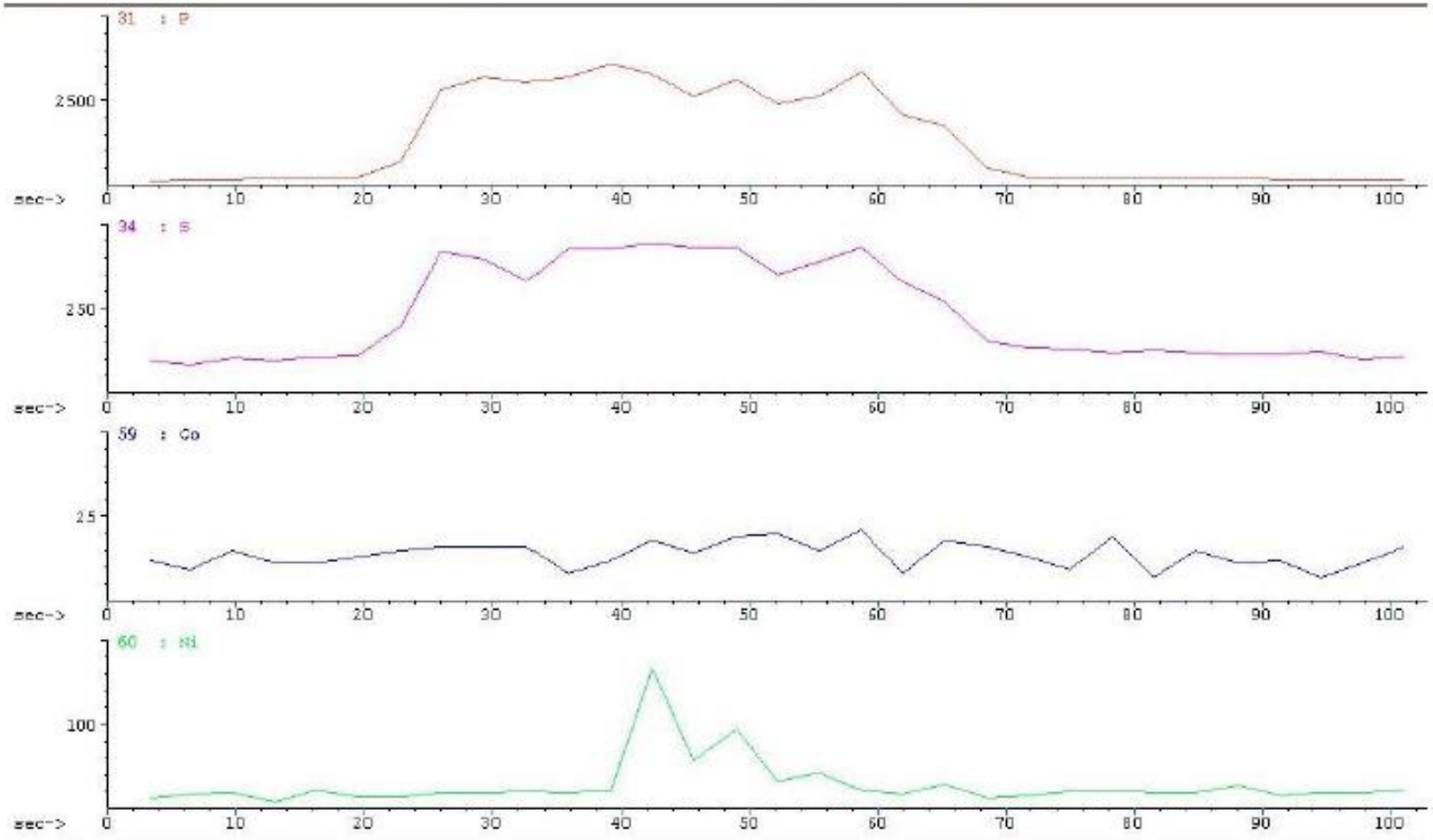
切線二 (雷射切割速率 100 μm/sec)

(圖三：第一條圖線代表磷 P 的訊號，第二條圖線代表硫 S 的訊號，第三條圖線代表鈷 Co 的訊號，第四條圖線代表鎳 Ni 的訊號。由磷與硫的訊號區域可以代表為肺臟檢體所在區域，磷與硫沒有高的區域為石蠟區。於 140s~170s 與 220s 的位置為肺組織所在處，鎳與鈷明顯升高於 140s~170s 的肺臟區域，而於 220s 的位置為肺臟有發現鈷的輕度上升。)



切線三 (雷射切割速率 50 μm/sec)

(圖四：第一條圖線代表磷 P 的訊號，第二條圖線代表硫 S 的訊號，第三條圖線代表鈷 Co 的訊號，第四條圖線代表鎳 Ni 的訊號。由磷與硫的訊號區域可以代表為肺臟檢體所在區域，磷與硫沒有高的區域為石蠟區。於 20s~70s 的位置為肺組織所在處，鎳明顯升高於 40s~50s 的肺臟區域。)



Biomarker 2

- Patient 2 因為沒有手術，biopsy 檢體過小(少)，毛髮為 biomarker 最好的選擇。
- 將patient 2之腋毛，2015年2月11日以ICP-MS (Inductively Coupled Plasma Mass Spectrometry)分析，結果顯示Ni含量為 30.2 ug/g(axillary hair)
- 腋毛之意義:
  - Moderate to long term exposure (half-time)
  - Less contamination

職業暴露

- 從事鎳金屬冶煉之工作達25.8年，工作內容涵蓋所有生產線。

- 生產線包括：取料區→入料區→原料輸送帶→加料機→電爐→金屬鎳水(出水區)→造粒區(水池)→乾燥機與過篩機(柴油動力)→過磅包裝。

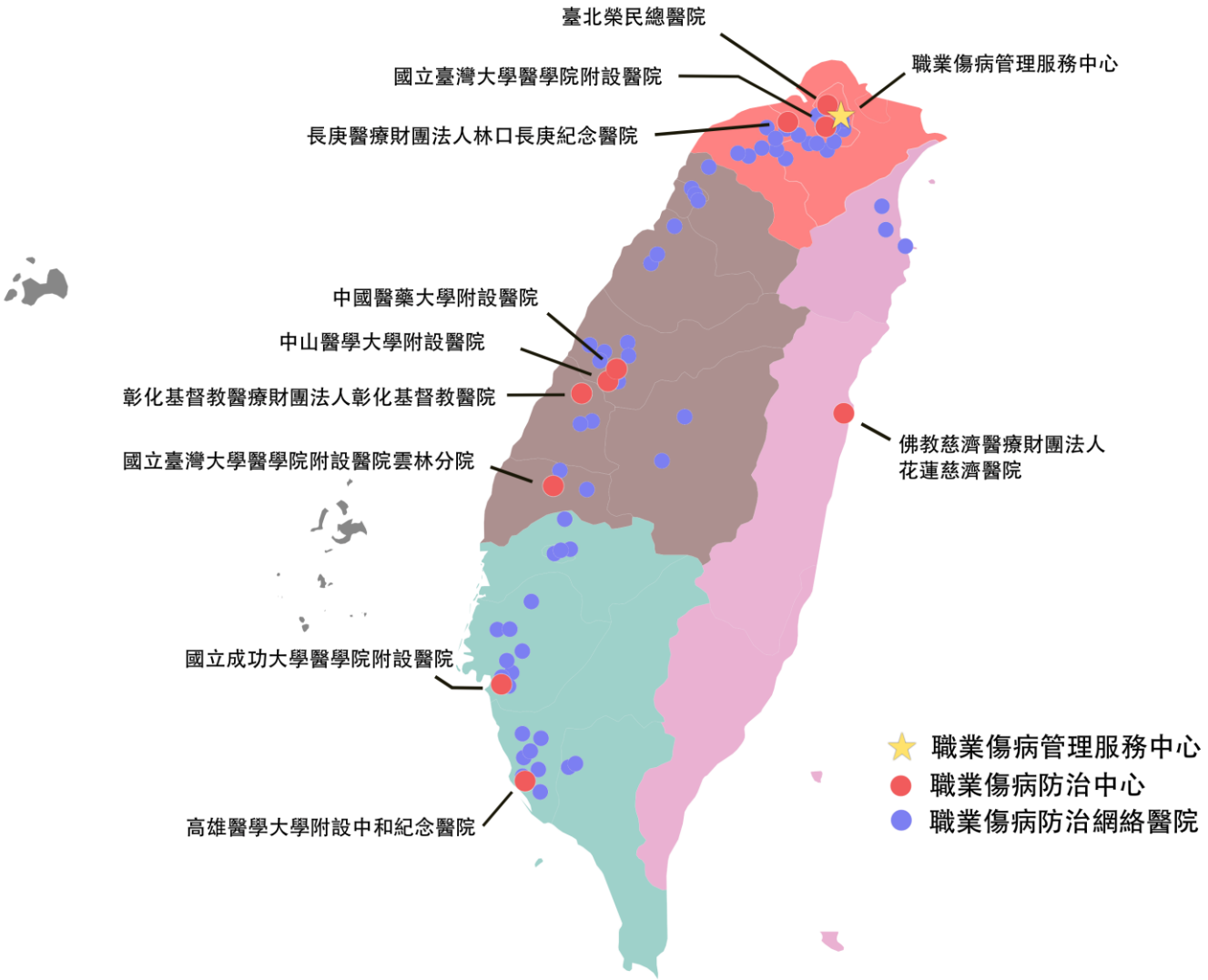
Industrial Chemical Agents

- Asbestos
- Arsenic
- Beryllium
- Cadmium
- Chromium(VI)
- Nickel
- Radon
- Acrylonitrile
- Chloromethylethers
- Coal-related products
- Mustard gas
- Silica
- Vinyl chlorine
- Diesel engine exhaust

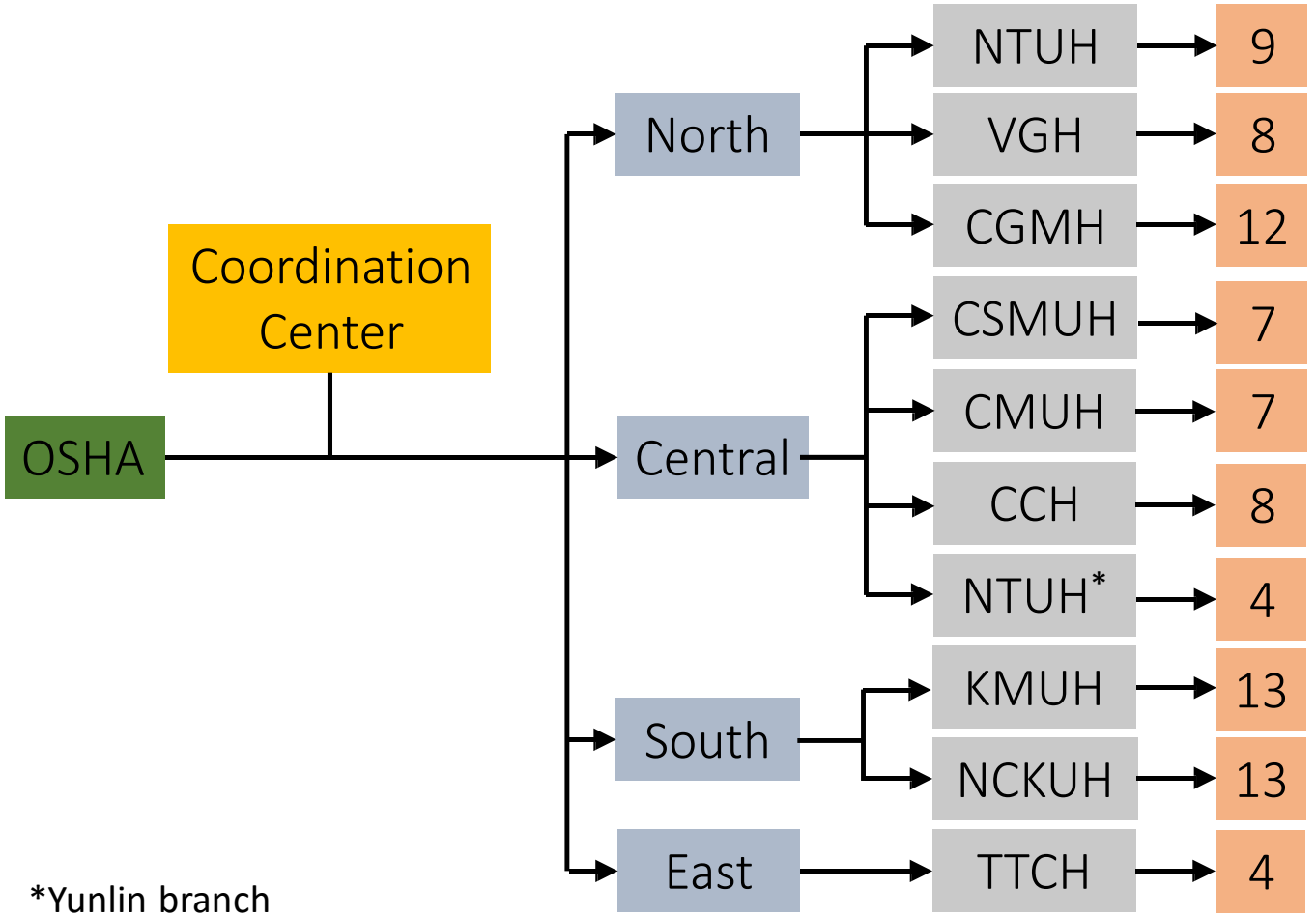
Outlines

- Occupation and Environment Related Respiratory Diseases in Taiwan
  - Pneumoconiosis- Silicosis
  - Work-related Asthma
  - Asbestosis
- Occupation and Environment Related Lung Cancers
  - Mesothelioma
  - Ni-induced lung cancer
- **Notification System in Taiwan**

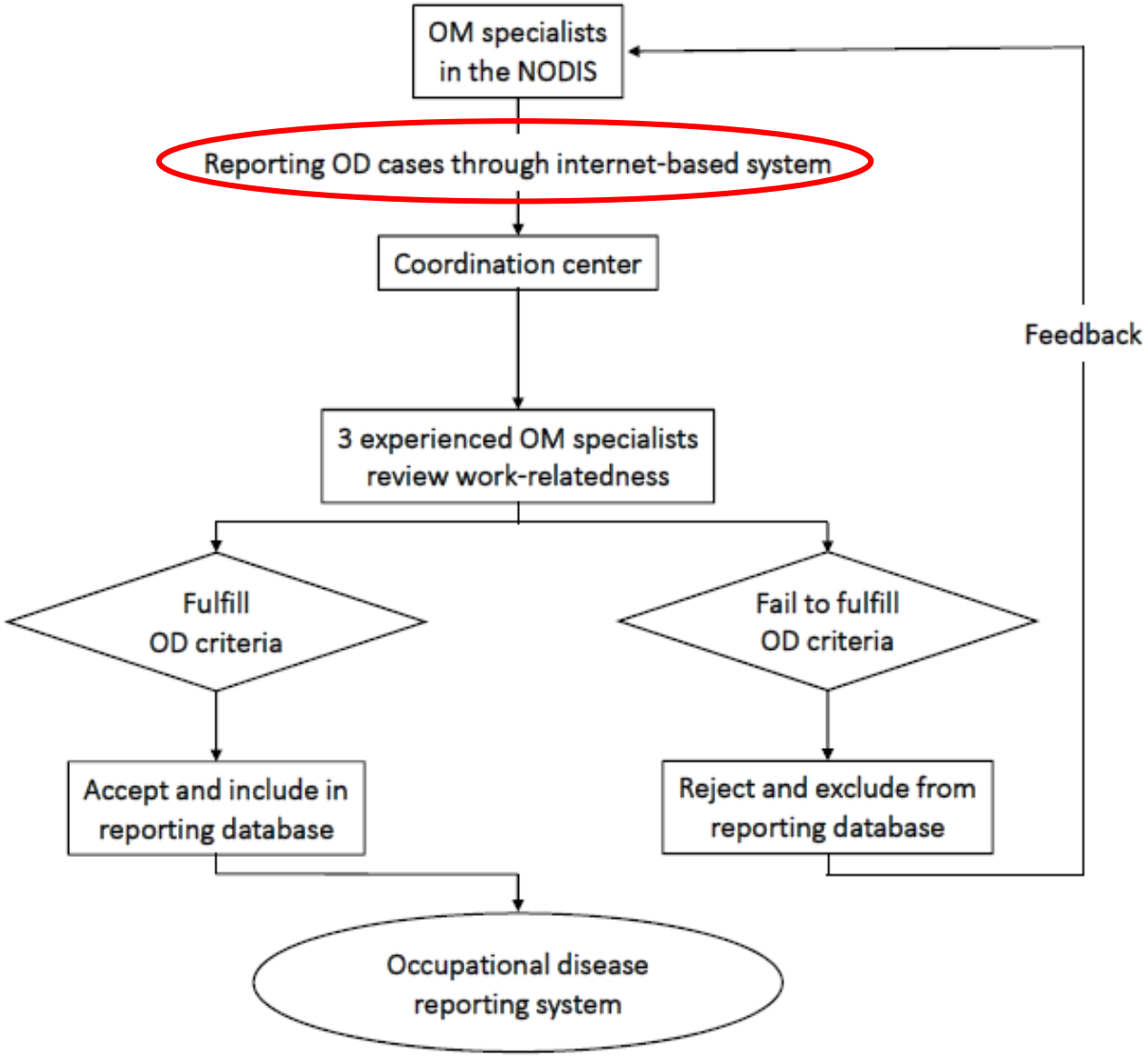
Network of Occupational Diseases and Injuries Service (NODIS)



10 CODISs + 85 Network Hospitals



*Yunlin branch


OM specialists in the NODIS
Reporting OD cases through internet-based system
Coordination center
3 experienced OM specialists review work-relatedness
Fulfill OD criteria
Fail to fulfill OD criteria
Accept and include in reporting database
Reject and exclude from reporting database
Occupational disease reporting system
Feedback

Internet-Based Reporting System for Occupational Diseases

- To provide comprehensive and reliable national data on the incidence of occupational diseases
- To publish comparative national statistics and reports, and contribute to international data
- To inform measures for the primary prevention of occupational diseases
- To ensure appropriate and effective workers' compensation schemes

職業傷病通報系統
Occupation injury and disease notification system

目前使用者：莊弘毅
上次登入時間：
2019/12/06 23:58:26

- 登出系統
- 公布欄
- E-mail信箱
- 客服專線
- 問答集-線上提問
- 修改密碼及基本資料
- 職災傷病通報系統
  - 網絡醫院
  - 防治中心
    - 個案通報
    - 個案後續追蹤填報
    - 通報審核
    - 通報資料查詢
    - 通報品質結果
    - 月報表填報
    - 門診時間表
  - 管服中心/職安署
  - 品質審查
    - 委員輸入品審結果
  - 勞保局統計勾稽
    - 勞保局勾稽結果
  - 統計報表
    - 職業傷病通報單統計
    - 年度職業傷病統計表
    - 職業疾病ICD-9項目
    - 職業疾病致病因子
    - 職業傷害
    - 品質評估表

個案通報

新增 修改 刪除 查詢

現在狀態:新增

個案基本資料及傷病情形診斷 | 本次傷病相關之工作資料

通報表單類別：	目前正新增通報個案		
系統編號(電腦編號)：	xxxxxxxxxxx	* 個案編號：	查詢重複

個案基本資料

醫院名稱：	(1302050014)財團法人私立高雄醫學大學附設中和紀念醫院		
* 個案姓名：	(填寫姓氏即可)	* 身分證字號：	前2碼 未4碼
* 就診日期：	西元	* 出生日期：	西元 (出生年)
* 通報日期：	西元 2019/12/07 00:	* 性別：	(1)男
電話(宅)：	-	電話(公)：	-
* 有無使用職業(傷)病門診單：	(0)請選擇...		
* 個案來源：	(0)請選擇...	* 投保狀況：	(0)請選擇...
* 個管師姓名：	莊弘毅	* 主治醫師：	莊弘毅
培訓醫師：	請選擇		

傷病情形及診斷

* (0)請選擇

建檔日期：	西元2019/12/07 00:05:23	建檔人：	莊弘毅
最近修改日期：	西元2019/12/07 00:05:23	修改人：	莊弘毅

本頁暫存 | 資料送審

個案基本資料及傷病情形診斷 | 本次傷病相關之工作資料

個案通報

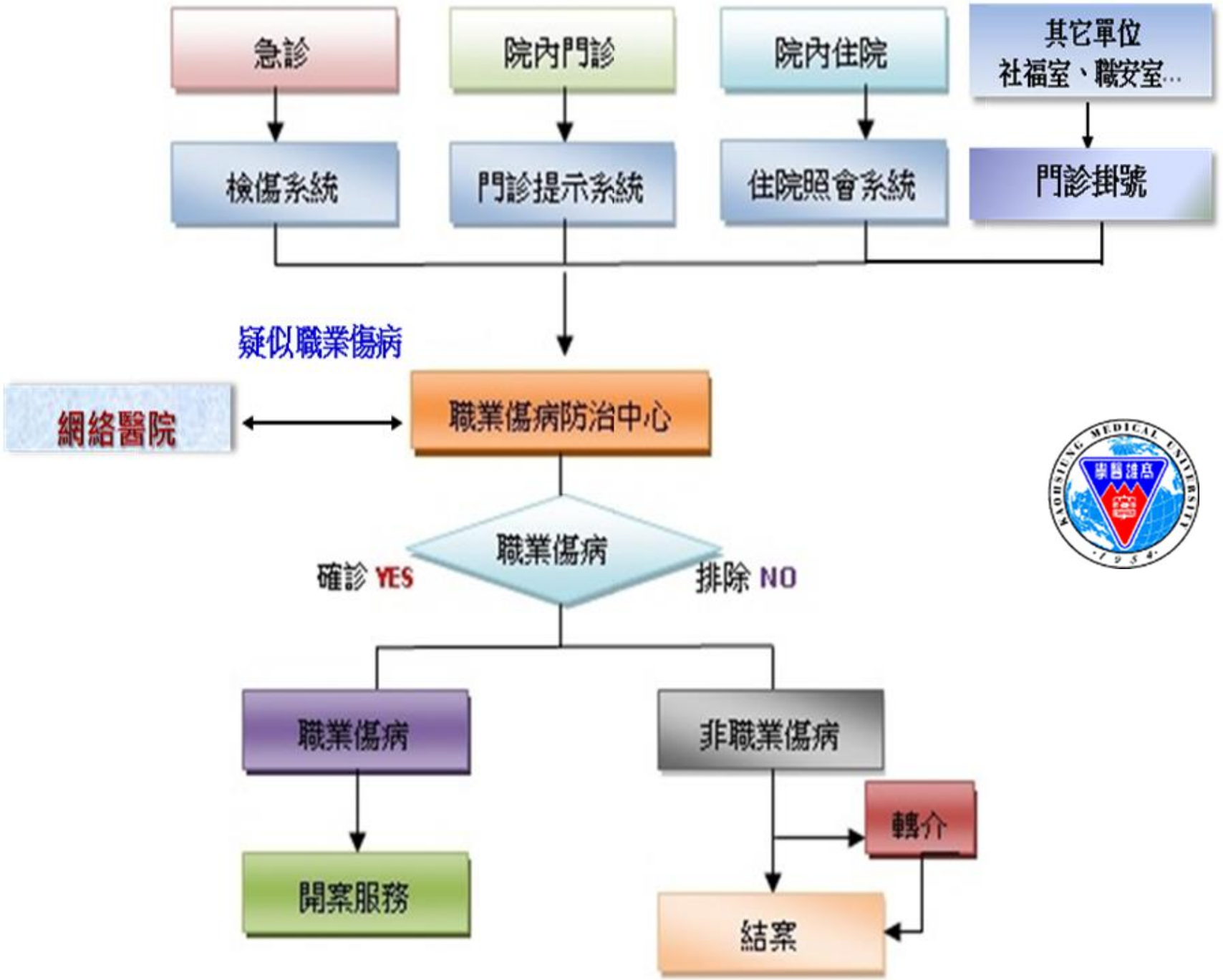
現在狀態:新增

個案基本資料及傷病情形診斷 ►►本次傷病相關之工作資料

* 職業標準分類碼：	(0)請選擇 職業標準分類碼分類標準 如選其他，請說明：
* 行業別：	(0)請選擇... 行業別分類標準 如選其他，請說明：
本次傷病相關之工作性質：	描述(字數在無斷行300中文字或600英數字以內) * 從事本項作業約從西元 年至西元 年，合計 年。 從事相同工作之同事有 名，其中 名有相同或類似情形。 其他部門同事有 名有相同或類似情形，其從事工作內容分別為何，請說明：
*目前職業狀況：	(0)請選擇... (無工作，定義上是指從有無偏主來判定)
過去之工作性質：	職業表(列出在此工作之前之工作經歷) 新增
*工作場所所在地：	(0)請選擇... (0)請選擇... 鄉鎮市區查詢 如皆選其他，則請描述：
*是否進行工作場所訪視：	(0)請選擇...
*是否曾停止工作：	(0)請選擇...
停止工作時間：	西元

建檔日期：	西元2019/12/07 00:05:23	建檔人：	莊弘毅
最近修改日期：	西元2019/12/07 00:05:23	修改人：	莊弘毅

本頁暫存 資料送審


急診
院內門診
院內住院
其它單位
社福室、職安室…
檢傷系統
門診提示系統
住院照會系統
門診掛號
疑似職業傷病
網絡醫院
職業傷病防治中心
職業傷病
確診 YES
排除 NO
職業傷病
非職業傷病
轉介
開案服務
結案

KMUH石綿個案院內轉介流程

胸腔內科 | 胸腔外科 | 病理部

↓

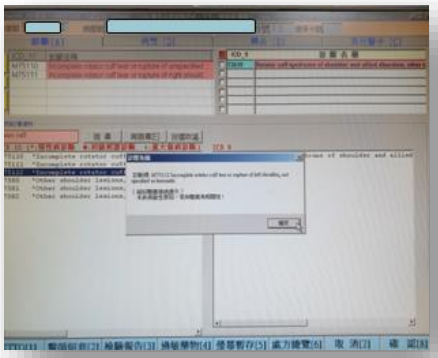
門診提示系統 | 住院照會系統 | 簡訊通知

↓

職業傷病防治中心

↓

排除 | 確診



Thank You For Comments And Questions!!

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