179 methods were collected in this edition. The objectitve of this project was to develop a set of technical norms for monitoring toxic substances in workplace air. These include performance specifications for monitoring methods development, testing protocols and evaluation criteria were also included; sampling strategy for the field evaluation; Analytical quality control and Proficiency Analytical Testing Program in different laboratories. Specifications, protocols, and criteria should also be evaluated with 41 new toxic substances to assure their flexibility and applicability with all other toxic substances.

In the performance specifications for monitoring methods development, several different factors have been identified as necessary for testing in the laboratory and field evaluation. These include selection of sampling filters or solid adsorbents, sampling efficiency, storage stability of the samples, elution or desorption efficiency, effect of known interferences, precision and detection limit of the method.

Occupational exposure sampling strategy is a general guide for the field evaluation, including selection of sampling points, time of sampling, sampling duration and so on.

The performance specifications for monitoring methods development and occupational exposure sampling strategy were collected in the 3rd edition of the book mentioned above. It was published in 1990, contained 168 toxic substances with 203 analytical methods. The majority of the methods that concerns the key project were collected in this edition.

Transfer of standard gases for calibration and Proficiency Analytical Testing Program are important technique for analytical quality control, there were great advances during last four years. Standard charcoal tubes of benzene, toluene and xylene were transfered to 13 participating laboratories of PAT Program to determine the analytical competence of them. According to the data reported, benzene and toluene in charcoal tubes were quantitatively recovered, whlie xylene, over 90% were recovered.

# 慢性三硝基甲苯(TNT)中毒16例死因分析

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我厂自1950～1989年间，诊断慢性TNT中毒170例死亡16例，现将其死因分析如下。

## 一、临床资料

1. 资料来源及一般情况

16例慢性TNT中毒死亡病例均为住院死亡。中毒诊断按国家诊断标准。疾病诊断：白血病为细胞学诊断；癌症为病理诊断，B超、血液诊断。16例均为男性，年龄43～57岁，平均50.8岁，工龄10～23年，平均16.5年，诊断至病死年限2～19年，平均6.6年。

2. 慢性TNT中毒的死因见下表。

16例慢性TNT中毒患者死因分析

| 死　因 | 死亡例数 | % |
|---|---|---|
| 中毒性肝病→肝硬化→肝衰 | 9 | 56 |
| 白　血　病 | 1 | 6 |
| 肝　　癌 | 2 | 13 |
| 胰癌转肝癌 | 1 | 6 |
| 其他疾病 | 3 | 19 |

## 二、讨论

1. 从16例慢性TNT中毒患者死因分析来看，死于中毒性肝病发展为肝硬化，导致肝昏迷、肝衰者9例，占56%。因此，积极采取各种保肝措施，使其尽量不发展成肝硬化，或推迟肝硬化进程，是防止慢性中毒死亡的最重要的关键。

此外，死于肝癌、白血病、胰癌转肝癌4例，占25%。有人发现TNT对鼠伤寒沙门氏菌属有致突变作用，本4例是否与此有关，有待进一步探讨。

2. 从死亡年龄看最小者43岁，最大57岁，平均50.8岁，与我国男性平均死亡年龄73岁相比，缩短22年多，可见加强对TNT中毒防治工作的重要性。

（本文承蒙沈阳市职业病防治院白汝义副主任医师指导，特此致射。）