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Comparison of source identification of metals in road-dust and soil
2009-11-27

Source identification of toxic metals is very critical for pollution prevention and human health protection. Many studies only use either road dust metal data or soil metal data to evaluate metal contamination and identify pollution sources, and this may lead to the exclusion of some important information. In this study, the differences of metal spatial distribution and source identification between road dust and associated soil in an industrial area were investigated. Results indicate the metal concentrations in road dust were generally higher than those in soil. Based on the average concentrations, the order for dust metal concentrations was Fe>>Zn>>Pb>Cu>Cr>Ni. The order for soil metal concentrations was slightly different, namely Fe>>Zn>>Cu>Pb>Ni>Cr. The spatial distributions of metals in the road dust were very different from those in the soil, except for Fe. The GIS results indicate that elevated levels of Fe, Zn, and Pb were present in mad dust near a steel plant. High concentrations of Cu, Cr, and Ni appeared at a road intersection. Elevated metal concentrations of Fe, Zn, Pb, Cu, and Cr were present in soil around the steel plant. A coal-fired power plant did not seem to be a significant metal source in this study. Significant correlations for dust metals imply that these were well mixed in the study area. The metal sources identified by PCA with soil metal data were obviously different from those identified with road dust metal data. When road dust metal data were used, the changes of PCA analysed areas slightly influenced the source identification. The PCA results were obviously influenced by changes of analysed areas when soil metal data were used.

Authors: Chang, Shih-Hsien; Wang, Kai-Sung; Chang, Hsuan-Fang; Ni, Wan-Wen; Wu, Bi-Ju; Wong, Ruey-Hong; Lee, Hong-Shen
Full Source: Soil & Sediment Contamination 2009, 18(5), 669-683 (English)

Organic contaminants in sewage sludge (biosolids) and their significance for agricultural recycling
2009-11-27

Organic chemicals discharged in urban wastewater from industrial and domestic sources, or those entering through atmospheric deposition onto paved areas via surface run-off, are predominantly lipophilic in nature and therefore become concentrated in sewage sludge, with potential implications...
The goal was to test 14 nerve agent model compounds of soman, sarin, tabun, and cyclohexyl methylphosphonofluoridate (GF) for their suitability as substitutes for true nerve agents.

Nerve Agent Analogues That Produce Authentic Soman, Sarin, Tabun, and Cyclohexyl Methylphosphonate-Modified Human Butyrylcholinesterase

2009-11-27

The goal was to test 14 nerve agent model compounds of soman, sarin, tabun, and cyclohexyl methylphosphonofluoridate (GF) for their suitability as substitutes for true nerve agents. The authors wanted to know whether the model compounds would form the identical covalent adduct with human butyrylcholinesterase that is produced by reaction with true nerve agents. Nerve agent model compounds containing thiocholine or thiomethyl in place...
of fluorine or cyanide were synthesized as Sp and Rp stereoisomers. Purified human butyrylcholinesterase was treated with a 45-fold molar excess of nerve agent analogue at pH 7.4 for 17 h at 21°C. The protein was denatured by boiling and was digested with trypsin. Aged and non-aged active site peptide adducts were quantified by matrix-assisted laser desorption/ionisation time-of-flight (MALDI-TOF) mass spectrometry of the tryptic digest mixture. The active site peptides were isolated by HPLC and analysed by MALDI-TOF-TOF mass spectrometry. Serine 198 of butyrylcholinesterase was covalently modified by all 14 compounds. Thiocholine was the leaving group in all compounds that had thiocholine in place of fluorine or cyanide. Thiomethyl was the leaving group in the GF thiomethyl compounds. However, sarin thiomethyl compounds released either thiomethyl or iso-Pr, while soman thiomethyl compounds released either thiomethyl or pinacolyl. Thiocholine compounds reacted more rapidly with butyrylcholinesterase than thiomethyl compounds. Labelling with the model compounds resulted in aged adducts that had lost the O-alkyl group (O-Et for tabun, O-cyclohexyl for GF, iso-Pr for sarin, and pinacolyl for soman) in addition to the thiocholine or thiomethyl group. The nerve agent model compounds containing thiocholine and the GF thiomethyl analogue were found to be suitable substitutes for true soman, sarin, tabun, and GF in terms of the adduct that they produced with human butyrylcholinesterase. However, the soman and sarin thiomethyl compounds yielded two types of adducts, one of which was thiomethyl phosphonate, a modification not found after treatment with authentic soman and sarin.

Authors: Gilley, Cynthia; MacDonald, Mary; Nachon, Florian; Schopfer, Lawrence M.; Zhang, Jun; Cashman, John R.; Lockridge, Oksana

Full Source: Chemical Research in Toxicology 2009, 22(10), 1680-1688 (Eng)

Chemical Synthesis of Two Series of Nerve Agent Model Compounds and Their Stereoselective Interaction with Human Acetylcholinesterase and Human Butyrylcholinesterase

Both G and V type nerve agents possess a centre of chirality about phosphorus. The Sp enantiomers are generally more potent inhibitors than their Rp counterparts toward acetylcholinesterase (AChE) and butyrylcholinesterase (BChe). To develop model compounds with defined centres of chirality that mimic the target nerve agent structures, the authors synthesised both the Sp and the Rp stereoisomers of two series of G type nerve agent model compounds in enantiomerically enriched form. The two series of model compounds contained identical substituents on the phosphorus as the
G type agents, except that thiomethyl (CH₃-S-) and thiocholine [(CH₃)₃NCH₂CH₂-S-] groups were used to replace the traditional nerve agent leaving groups (i.e., fluoro for GB, GF, and GD and cyano for GA). Inhibition kinetic studies of the thiomethyl- and thiocholinesubstituted series of nerve agent model compounds revealed that the Sp enantiomers of both series of compounds showed greater inhibition potency toward AChE and BChE. The level of stereoselectivity, as indicated by the ratio of the bimolecular inhibition rate constants between Sp and Rp enantiomers, was greatest for the GF model compounds in both series. The thiocholine analogues were much more potent than the corresponding thiomethyl analogues. With the exception of the GA model compounds, both series showed greater potency against AChE than BChE. The stereoselectivity (i.e., Sp > Rp), enzyme selectivity, and dynamic range of inhibition potency contributed from these two series of compounds suggest that the combined application of these model compounds will provide useful research tools for understanding interactions of nerve agents with cholinesterase and other enzymes involved in nerve agent and organophosphate pharmacology. The potential of and limitations for using these model compounds in the development of biological therapeutics against nerve agent toxicity are also discussed.

Authors: Barakat, Nora H.; Zheng, Xueying; Gilley, Cynthia B.; Mac-Donald, Mary; Okolotowicz, Karl; Cashman, John R.; Vyas, Shubham; Beck, Jeremy M.; Hadad, Christopher M.; Zhang, Jun

Full Source: Chemical Research in Toxicology 2009, 22(10), 1669-1679 (Eng)

A blood lead benchmark for assessing risks from childhood lead exposure

2009-11-27

Although a target blood lead concentration (PbB) of ten micrograms per dL (10 µg/dL) has been used as the basis for environmental decision-making in California for nearly two decades, recent evidence suggests a relationship between cognitive deficits and PbB at concentrations <10 µg/dL. Based on a published meta-analysis of children’s IQ scores and their blood lead concentrations, a new blood lead benchmark was developed: an incremental increase in blood lead concentration (¢PbB) of 1 µg/dL, an increase that could decrease the IQ score in an average school child in California by up to one point. Although there is no evidence to date for a threshold for the neurobehavioral effects of lead, a one-point IQ decrement was chosen to represent a de minimus change. To safeguard the intellectual potential of all children, additional efforts to reduce or eliminate multiple-source exposures to lead are warranted.
Although antivenom administration is clinically effective, it carries an important risk of early anaphylactic reactions, ranging from relatively benign nausea, vomiting, and urticaria to life-threatening angioedema, bronchospasm and hypotension. Currently, no adequately powered study has demonstrated significant benefit from the use of any prophylactic drug. A high rate of anaphylactic reactions observed during a trial of three different antivenoms in Ecuador prompted adoption of premedication with i.v. (IV) hydrocortisone and diphenhydramine together with slower administration of antivenom. In a rural mission hospital in Eastern Ecuador, 53 consecutive snakebite victims received a new antivenom regimen in 2004-2006, comprising prophylactic drugs and IV infusion of antivenom over 60 min. They were compared to an historical control cohort of 76 patients treated in 1997-2002 without prophylactic drugs and with IV “push” injection of undiluted antivenom over 10 min. All these patients had incoagulable blood on admission and all were treated with Brazilian Instituto Butantan polyspecific antivenom. Baseline characteristics of the historical control and premedicated groups were broadly similar. In the historical group, early reaction rates were as follows: 51% of patients had no reaction; 35% had mild reactions; 6% moderate; and 6% severe. In the premedicated/slow IV group, 98% of patients had no reaction; 0 mild; 0 moderate; and 2% severe. The difference in reaction rates was statistically significant. Premedication with i.v. hydrocortisone and diphenhydramine together with dilution of antivenom and its administration by IV infusion over 60 min appeared to reduce both the frequency and severity of anaphylactic reactions. A randomised blinded controlled trial is needed to confirm these encouraging preliminary findings.

Authors: Caron, Elena J.; Manock, Stephen R.; Maudlin, Jeffrey; Koleski, Jerome; Theakston, R. David G.; Warrell, David A.; Smalligan, Roger D.
Full Source: Toxicon 2009, 54(6), 779-783 (Eng)
The present investigation was conducted to determine the molecular aspects of DON toxicity on human colon carcinoma cells (HT 29). The mycotoxin, deoxynivalenol (DON), is detected in cereal grains and grain-based food products. DON has numerous toxicological effects on animals and humans. The present investigation was conducted to determine the molecular aspects of DON toxicity on human colon carcinoma cells (HT 29). The effects of DON were monitored on (i) cell viability, (ii) heat shock protein expressions as a parameter of protective and adaptive response, (iii) oxidative damage and (iv) cell death signalling pathway. Results showed that DON treatment inhibits cell proliferation, did not induce Hsp 70 protein expression and reactive oxygen species generation. DON induced a DNA fragmentation followed by p53 and caspase-3 activations. Findings suggested that oxidative damage is not the major contributor to DON toxicity. This mycotoxin induces direct DNA lesions and could be considered by this fact as a genotoxic agent inducing cell death via an apoptotic process.

Authors: Bensassi, Fatma; El Golli-Bennour, Emna; Abid-Essefi, Salwa; Bouaziz, Chayma; Hajlaoui, Mohamed Rabeh; Bacha, Hassen
Full Source: Toxicology 2009, 264(1-2), 104-109 (Eng)

Cancer mortality and oil production in the Amazon Region of Ecuador, 1990-2005
2009-12-07
In this study, the authors compared cancer mortality rates in Amazon cantons (counties) with and without long-term oil exploration and extraction activities. Mortality (1990 through 2005) and population census (1990 and 2001) data for cantons in the provinces of the northern Amazon Region (Napo, Orellana, Sucumbios, and Pastaza), as well as the province with the capital city of Quito (Pichincha province) were obtained from the National Statistical Office of Ecuador, Instituto Nacional del Estadistica y Censos (INEC). Age- and sex-adjusted mortality rate ratios (RR) and 95% confidence intervals (CI) were estimated in order to evaluate total and cause-specific mortality in the study regions. The results demonstrated that among Amazon cantons with long-term oil extraction activities, no evidence was detected of increased rates of death from all causes (RR) 0.98; 95% CI ) 0.95-1.01) or from overall cancer (RR) 0.82; 95% CI ) 0.73-0.92). In addition, relative risk estimates were lower for most individual site-specific cancer deaths. Mortality rates in the Amazon provinces overall were significantly
The aim of this study was to quantitatively assess hand residues of chlorpyrifos and methamidophos in a field setting. In addition, the authors were seeking to explain the residues through application volume and determinants of exposure using application data for 28 subsistence farmers in the Pacific Region of Nicaragua. Hand residues were estimated by recovery of the pesticides by standardised wipe sampling for both hands. The samples were then analysed using solvent extraction and gas chromatography with electron capture detector. Application volumes were based on data on individual spraying rates and mixing volumes. Eleven determinants of exposure, related to work practices during mixing and spraying of the pesticides, were assessed for each subject from videotapes. Correlation and regression analyses estimated the associations between hand residues, application volume, pesticide type, and determinants of exposure. The authors found that the correlations between residues for different hand parts were high ($r \approx 0.75-0.98$). Total hand residue (sum of residues of parts of both hands) correlated with application volume ($r \approx 0.43, p \approx 0.02$), not washing hands ($r \approx 0.41, p \approx 0.04$), spraying nozzle forward ($r \approx 0.26, p \approx 0.17$), manipulation of hose ($r \approx 0.32, p \approx 0.09$), and insecticide type [chlorpyrifos vs. methamidophos; $r \approx 0.31, p \approx 0.10$]. A model that explained total hand residue with these five variables yielded a multiple correlation coefficient of 0.67 ($p \approx 0.01$).
The main route of exposure to radioactive aerosols in the nuclear industry is via inhalation. In this study, the authors assessed the radiation dose from the intake of these aerosols. In order to achieve this, it is necessary to know their physical (aerodynamic diameter distribution) and chemical (dissolution rate in extracellular lung fluid) characteristics. Air samples were taken from the uranium processing plant at the Nuclear Research Centre, Negev. Measurements of aerodynamic diameter distribution using a cascade impactor indicated an average activity median aerodynamic diameter value close to 5 μm, in accordance with the recent recommended values of International Commission on Radiological Protection (ICRP) model. Solubility profiles of these aerosols were detected by performing in vitro solubility tests over 100 d in a simultant solution of the extracellular fluid. The authors concluded that the tests indicated that the uranium aerosols should be assigned to an absorption between Types M and S (as defined by the ICRP Publication 66 model).

Authors: Kravchik, T.; Oved, S.; Paztal-Levy, O.; Pelled, O.; Gonen, R.; German, U.; Tshuva, A.
Full Source: Radiation Protection Dosimetry 2008, 131(4), 418-424 (Eng)

Future standard for storing organic peroxides. Practical aspects for its application
2009-12-07
In this study, the author discusses the regulatory standard guidelines for storing organic peroxides - ITC MIE APQ-9 in Spain and the EC, for the case of storage in 3000 L portable containers. The literature outlines the scope of the standards, storage site requirements, types of containers, and modification of existing facilities.

Author: Ferruz, R.
Full Source: Ingenieria Quimica (Madrid, Spain) 2008, 40(463), 130-135
Mixed chemical-induced oxidative stress in occupational exposure in Nigerians

Exposure to single chemicals and associated disorders in occupational environments has received significant attention. Understanding these events holds great promise for risk identification, assessment and chemically induced disease prevention. During this study, 50 fasting male workers, age range 18-50 years exposed to chemical mixtures in a works department, mean duration 17.7 (±10.1 years and 30 controls matched for age, diet, sex and other demographic characteristics except exposure to chemicals were examined. Body mass index (BMI), antioxidant status and other biochemical indexes including plasma proteins [total protein] and subsets, albumin and total globulins were detected in plasma. The BMI was similar between exposed chemical workers and the control subjects (p > 0.05). Uric acid level was significantly higher in the exposed than in the controls (p < 0.01) probably in part up regulation to combat oxidative stress. In addition, the author observed that uric acid was significantly positively correlated with BMI (r = 0.46, p < 0.01), probably to match the body chemical burden. Ascorbate was in contrast significantly lower in chemical workers than in controls, reduced by 91% level in controls. Borderline inverse correlations between ascorbate, BMI and duration of exposure were detected. Copper (Cu) level, though slightly raised in chemical workers was not significant. Plasma proteins were significantly lower in chemical workers when compared to the control subjects. Total globulins was significantly reduced in chemical workers (p < 0.01). Other variables did not differ significantly. The authors concluded that the findings from this study are consistent with the existence of oxidative stress in these chemical workers.

Authors: Anetor, J. I.; Yaqub, S. A.; Anetor, G. O.; Nsonwu, A. C.; Adeniyi, F. A. A.; Fukushima, S.

In this study, the levels and congener patterns of PBDEs were investigated in human placental samples in Denmark. The median concentrations of PBDE-tri-hepta and BDE-209 in the 50 samples were 1.22 and 1.14 ng g⁻¹ lw, respectively, with the total sum ranging from 0.51 to 17.1 ng g⁻¹ lw, which is similar to previous placental studies. The PBDE content in placental tissue was dominated by BDE-209, which accounted for approximately 50% of the total amount of PBDEs. BDE-47, -99, and -153 were detected in all samples. Approximately equal amounts of BDE-47 and BDE-153 were observed in the placental tissue, which is in agreement with previous European studies of human serum. Principal Component Analysis (PCA) was performed to analyse congener patterns within and between mothers. The loading plot showed groupings of the measured PBDE variables in three groups, representative of Penta-, Octa- and Deca-BDE technical mixtures. Congeners representing the individual technical mixtures were close to orthogonal or inversely correlated, indicating variation in the congener patterns of internal exposure corresponding to the patterns of technical mixtures used in products. Visualisation of the participant objects according to body mass...
This study measured the serum levels of p,p'-DDT, p,p'-DDE, â-HCH, and HCB in healthy adults in Spain.

Serum levels of organochlorine pesticides in healthy adults from five regions of Spain
2009-12-07
This study measured the serum levels of p,p'-dichlorodiphenyl trichloroethane (p,p'-DDT), p,p'-dichlorodiphenyl dichlofuran (p,p'-DDT), â-hexachlorocyclohexane (â-HCH), and hexachlorobenzene (HCB) in healthy adults in Spain. In addition, the authors analysed these levels according to dietary, other lifestyle factors and anthropometric characteristics. The concentrations of such organochlorine pesticides (OCPs) in serum samples were measured in samples collected during 1992-1996 from 953 subjects aged 35-64 years. The subjects were residents of five Spanish regions and were randomly selected from the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort. OCPs were detected by means of gas chromatography with electron-capture detection (GC-ECD). The results indicated that the most frequent compound found in serum was p,p'-DDE, which was present in 98% of the samples, followed by HCB and â-HCH, found in 89% and 77% of samples, respectively, while p,p'-DDT could be measured only in 26% of subjects. The geometric means of serum concentrations (ng/g lipid) were 822 for p,p'-DDE, 167 for â-HCH, and 379 for HCB. The concentrations of all OCPs were positively associated with age and body mass index, and decreased along the period of blood collection. No association was detected between OCPs levels and dietary factors. The authors concluded that the concentrations of p,p'-DDE and â-HCB were higher in Murcia, one of southern regions, most likely associated with intensive past use of pesticides related to agricultural practices, while higher levels of HCB were found in Navarra, located in the north, maybe due to industrial use rather than agricultural application.

Authors: Jakszyn, Paula; Goni, Fernando; Etxeandia, Arsenio; Vives, Asuncion; Millan, Esmeralda; Lopez, Raul; Amiano, Pilar; Ardanaz, Eva; Barricarte, Aurelio; Chirlaque, M. Dolores; Dorronsoro, Miren; Larranaga, Nerea; Martinez, Carmen; Navarro, Carmen; Rodriguez, Laudina; Sanchez, M. Jose; Tormo, M. Jose; Gonzalez, Carlos A.; Agudo, Antonio
Full Source: Chemosphere 2009, 76(11), 1518-1524 [Eng]
Parental stress increases the effect of traffic related air pollution on childhood asthma incidence

2009-12-07

Exposure to traffic related pollution (TRP) and tobacco smoke have been associated with new onset asthma in children. Psychosocial stress-related susceptibility has been proposed to explain social disparities in asthma. This study investigated whether low socioeconomic status (SES) or high parental stress, modified the effect of TRP and in utero tobacco smoke exposure on new onset asthma. 2,497 children aged 5-9 years with no history of asthma or wheeze at study entry (2002-2003) were recruited into the Children’s Health Study, a prospective cohort study in southern California. The primary outcome was parental report of doctor diagnosed new onset asthma during 3 years of follow-up. Residential exposure to TRP was assessed using a line source dispersion model. Information about maternal smoking during pregnancy, parental education (a proxy for SES), and parental stress were collected in the study baseline questionnaire. The risk of asthma attributable to TRP was significantly higher for subjects with high parental stress (HR 1.51 across the interquartile range for TRP; 95% CI 1.16-1.96) than for subjects with low parental stress (HR 1.05, 95% CI 0.74-1.49; interaction P value 0.05). In addition, stress was found to be associated with larger effects of in utero tobacco smoke. A similar pattern of increased risk of asthma was observed among children from low SES families who also were exposed to either TRP or in utero tobacco smoke. The authors concluded that the findings from this study suggest that children from stressful households are more susceptible to the effects of TRP and in utero tobacco smoke on the development of asthma.

Authors: Shankardass, Ketan; McConnell, Rob; Jerrett, Michael; Milam, Joel; Richardson, Jean; Berhaneb, Kiros

Full Source: Proceedings of the National Academy of Sciences of the United States of America 2009, 106(30), 12406-12411 (Eng)

Carbon monoxide poisoning in Jerusalem: epidemiology and risk factors

2009-12-07

In this study, the authors described the epidemiology of carbon monoxide (CO) poisoning in Jerusalem and identify risk factors for such poisoning. A retrospective descriptive analysis of patients with CO poisoning who presented to the Hadassah hospitals in Jerusalem from 1994 to 2006 was undertaken. All patients with suspected CO poisoning were examined and those with confirmed cases [carboxyHb (COHb) level >5%] were included. Sources of exposure, seasonal variation, and demographic characteristics
In this study, whole blood and serum samples were collected from Chinese stable chronic renal failure (CRF) patients (n = 81), hemodialysis patients (n = 135), post transplant patients (n = 60), subjects with normal renal function (NRF; n = 42) were collected, as well as water and dialysate samples from five dialysis centres. The concentration of Se, Pb, and Cd was measured by atomic absorption spectrometry. The mean serum Se levels in patients with different degrees of renal failure were significantly lower than those of subjects with NRF (p < 0.01). Pb levels were not increased in renal failure patients, while the Cd levels in patients with various degrees of renal failure were higher than in subjects with NRF (p < 0.05). After correcting the results of Pb and Cd for hematocrit (Hct), however, Pb levels of dialysis patients were also increased. In the dialysis population under study, blood Pb and Cd levels were closely related to the time on dialysis, while contamination of the final dialysate may also contribute to the increased blood Cd and to a less extent Pb levels. Correction for Hct may be recommended to accurately compare blood Pb and Cd levels in dialysis patients and CRF patients with varying degrees of anaemia to those of subjects with NRF.

Authors: Chen, Bing; Lamberts, Ludwig V.; Behets, Geert J.; Zhao, Tingting;
SAFETY

Firearm pre-muzzle lead emission containment device
2009-11-27
A device for limiting, controlling, and disposing of lead particles released from a firearm’s openings and leakage areas rear of the muzzle. The device is composed of a cylindrical clear polycarbonate enclosure mounted on an aluminium frame which encloses the firearm and the shooter’s hands. A small opening at the rear of the cylinder allows the firearm muzzle to discharge the projectile. A restricted opening at the front of the cylinder allows the shooter to place hands and firearm within the enclosure. The clear polycarbonate provides light entry and visibility while affording the shooter some protection against a malfunctioning firearm. The enclosure is under negative air pressure in relation to the environment outside the enclosure. The negative air pressure may be provided by the bullet retention system that the device is mounted to.
Authors: Auvine, Douglas Alan

Method for neutralisation of gaseous chlorine during accidental release
2009-11-27
Air containing chlorine is extracted from a room and passes through a neutralisation solution circulated by a pump, then to a tank filled with the same solution. The mixing and reaction of the neutralisation liquid, containing 10-15% wt of sodium hydroxide and 3-10% wt of sodium thiosulfate, with chlorine proceeds to completion in the ejection process.
Authors: Kozhevnikov, A. B.; Petrosyan, O. P.
Full Source: Russ. RU 2,367,506 (Cl. B01D53/18), 20 Sep 2009, Appl. 2,007,135,706, 26 Sep 2007; 8pp. [Russ].

Method for removing dust, CO, HC, NOx from road tunnel air
2009-11-27
The method comprises electrostatic dedusting process for removing dust,
normal temperature catalytic oxidation of CO for removing CO, adsorption/catalytic purification process for removing NOx and hydrocarbon(HC). The removal ratios of dust, CO, NOx and HC in road tunnel air are 60-99.9%, 10-99%, 10-99%, and 10-99%, respectively. The method can effectively remove dust, CO, HC and NOx from road tunnel air simultaneously.
Authors: Lu, Guanzhong; Guo, Yun; Zhang, Zhigang; Guo, Yanglong; Wang, Li; Wang, Yanqin; Wang, Junsong; Gong, Xueqing; Liu, Xiaohui; He, Dannong; Yao, Wei; Ye, Guoqiang.
Full Source: Faming Zhuanli Shenqing Gongkai Shuomingshu (Ch).