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In this study, the authors present a survey on the occurrence and sources of 11 perfluoroalkyl acids (PFAA) in the main river basins in Italy, covering about 40% of the Italian surface area and 45% of the Italian population. Total concentrations of PFAA ranged from <LOD to 8μgL(-1), the highest concentrations being measured in the rivers impacted by industrial discharges. Among the rivers directly flowing into the sea, Brenta, Po and Arno present significant concentrations, while concentrations in Tevere and Adige, which are not impacted by relevant industrial activities, are almost all below the detection limits. The total estimated PFAA load of the five rivers was 7.5ty(-1) with the following percentage distribution: 39% PFBS, 32% PFOA, 22% short chain perfluorocarboxylic acids (PFCA), 6% PFOS and 1% long chain PFCA. PFOA and PFOS loads, evaluated in the present work, represent 10% and 2% of the estimated European loads, respectively. In Italy the most important sources of PFAA are two chemical plants which produce fluorinated polymers and intermediates, sited in the basin of rivers Po and Brenta, respectively, whose overall emission represents 57% of the total estimated PFAA load. Both rivers flow into the Adriatic Sea, raising concern for the marine ecosystem also because a significant PFOS load (0.3ty(-1)) is still present. Among the remaining activities, tanneries and textile industries are relevant sources of respectively PFBS and PFOA, together with short chain PFCA. As an example, the total PFAA load (0.12ty(-1)) from the textile district of Prato is equivalent to the estimated domestic emission of the whole population in all the studied basins.


Size and age-concentration relationships for perfluoroalkyl substances in stingray livers from eastern Australia

2014-11-11

While the literature has reported a widespread occurrence of perfluoroalkyl substances (PFASs) in marine biota, very limited studies have been dedicated to the southern hemisphere. This study investigated hepatic concentrations of nine PFAAs in 49 stranded stingrays from eastern Australia using liquid chromatograph coupled with tandem mass spectrometry. In addition, relationships with biological parameters (i.e. body size, age and sex) were analysed. Perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) were the predominant compounds quantified, with hepatic concentrations varying from 2 to 117 and from 0.2 to 19ng·g(-1) w.w., respectively. A negative correlation between the concentration of PFASs in the livers of 32 blue-spotted stingrays and the body size/age was found. This relationship was independent of the animal’s sex. The authors postulate that the dependence on body size is related to differing uptake kinetics of the chemicals, after the sting rays were exposed to an increased level of the contaminants in their environment. Such a pollution event could be related to a severe flood event that occurred at this location a few months before the samples’ collection. The authors concluded that the findings from the present study indicate that the influence of the body size/age should be taken into account when estimating bioaccumulation parameters from environmental measurements or exposure levels of biota to PFASs.

Authors: Baduel C, Lai FY, Townsend K, Mueller JF.


Comparative proteomic analysis of ovary for Chinese rare minnow (Gobiocypris rarus) exposed to chlorophenol chemicals

2014-11-11

Pentachlorophenol (PCP) and 2,4,6-trichlorophenol (TCP) are suspected of disrupting the endocrine system and thus affecting human and wildlife reproduction, but the potential common mechanisms and biomarkers of chlorophenols (CPs) in the ovary are not fully elucidated. In the present study, the female rare minnow (Gobiocypris rarus) was exposed to PCP...
In this study, the reproductive organs from 101 wild male mink collected in Sweden were examined during necropsy.

(0.5, 5.0, and 50μg/L), TCP (1.0, 10, and 100μg/L) and 17β-oestradiol (as a positive control) for 28 days, and the matrix-assisted laser desorption/ionisation (MALDI) tandem time-of-flight (TOF/TOF) mass spectrometry analysis was employed to investigate the alteration of protein expression in the ovary. After comparison of the protein profiles from treated and control groups, 22 protein spots were observed to be altered in abundance (>2-fold) from female treated groups, and 14 protein spots were identified successfully. These proteins were related to molecular response patterns, endocrine effects, metabolic pathways, and even the possible carcinogens in response to CP exposure. The seven differentially expressed mRNA encoding proteins were measured by quantitative real-time PCR (QRT-PCR) and histopathology was also measured. The data from this study demonstrates that alterations of multiple pathways may be associated with the toxic effects of CPs on ovaries. Although numerous studies have shown the affection of the endocrine system with exposure to chlorophenols (CPs), there is little reported on the alterations of protein expression in the ovaries from rare minnows following exposure to PCP or TCP. In the present study, a comparative proteomic approach using two dimensional gel electrophoresis and mass spectrometry (MALDI-TOF/TOF MS) has been developed to identify certain proteins in the ovaries of Chinese rare minnow, whose abundance changes during exposure to CPs. After comparison of the protein profiles from treated and control groups, 22 protein spots were observed to be altered in abundance (>2-fold) from female treated groups, and 14 protein spots were identified successfully. These proteins were related to molecular response patterns, endocrine effects, metabolic pathways, and even the possible carcinogens in response to CP exposure. Because the mechanism often involves changes in the expression of multiple proteins rather than a single protein, a global analysis of the protein alterations can result in valuable information to understand the CP action mechanism. The authors concluded that all the above results demonstrate that the Vtg, SUMO, Lec-3 and PIMT protein are potential biomarkers and involved in the toxicity pathway of CP exposure in aquatic animals, which should be the primary focus of studies on the CP ovary toxicity mechanism in the future.


Environmental pollutants and alterations in the reproductive system in wild male mink (Neovison vison) from Sweden

2014-11-11

The wild American mink, a semi-aquatic top predator, is exposed to high levels of environmental pollutants that may affect its reproductive system. In this study, the reproductive organs from 101 wild male mink collected in Sweden were examined during necropsy. Potential associations between various variables of the reproductive system and fat concentrations of polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), dichlorodiphenyldichloroethylene (p,p'-DDE) and other organochlorine pesticides and liver concentrations of perfluoroalkyl acids (PFAAs) were investigated using multiple regression models. The anogenital distance was negatively associated (p<0.05) with concentration of p,p'-DDE and some PFAAs (perfluorooctane sulfonate (PFOS), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnDA) and ∑PFAA). Penis length was positively associated with PCB 28, PCB 47/48, PCB 52 and PCB 110 (p<0.05), and some of these congeners were also associated with baculum length and penis weight. In contrast, penile length tended (p<0.1) to be shorter in mink with high concentrations of p,p'-DDE. These data may help to improve the understanding of how environmental pollution affects male reproduction in both wildlife and humans. Overall, the study suggests endocrine disrupting effects in wild mink and identifies potentially important pollutants in the complex mixture of contaminants in the environment. In addition, the results suggest that the variables of the reproductive system of male mink used in this study are good candidates for use as indicators of environmental pollution affecting the mammalian reproductive system.

Authors: Persson S, Magnusson U.


Oceans and Human Health: a rising tide of challenges and opportunities for Europe

2014-11-11

The European Marine Board recently published a position paper on linking oceans and human health as a strategic research priority for Europe. With this position paper as a reference, the March 2014 Cornwall Oceans and Human Health Workshop brought together key scientists, policy makers,
The authors recently reported that occupational exposure to trimethyltin (TMT) is a risk factor for developing kidney stones. To further examine the association between TMT exposure and the formation of kidney stones, a 180-day animal study was conducted. The randomly grouped Sprague-Dawley (SD) rats were exposed to TMT in the drinking water at doses of 0, 8.2, 32.8 and 131.3µgkg(-1) day(-1). Transient behavioural changes were observed in the high-dose group during the first 2 weeks of exposure. TMT exposure led to a significant dose-dependent inhibition of renal H(+)/K(+) -ATPase and an increase in urinary pH. In comparison to no kidney stones being identified in the control and the lowest dose group, 1 rat in the 32.8µgkg(-1) day(-1) dose group and 3 out of 9 rats in the 131.3µgkg(-1) day(-1) dose group were found to have stones in the kidney/urinary tract. Pathological analysis showed that more widespread calcium disposition was observed in kidneys of rats with TMT exposure compared with the rats in the control group. However, X-ray diffraction (XRD) analysis found that the kidney stones were mainly composed of struvite with the formula: NH$_4$MgPO$_4 \cdot 6$H$_2$O, while calcium-containing...
components were also detected. The authors concluded that together, this study further demonstrates through animal studies that chronic exposure to a relatively low level of TMT induces nephrotoxicity and increases the risk for developing kidney stones.


Evaluation of cytotoxic, genotoxic and inflammatory response in human alveolar and bronchial epithelial cells exposed to titanium dioxide nanoparticles

2014-11-11

The toxicity of titanium dioxide nanoparticles (TiO$_2$-NPs), used in several applications, seems to be influenced by their specific physicochemical characteristics. Cyto-genotoxic and inflammatory effects induced by a mixture of 79% anatase/21% rutile TiO$_2$-NPs were investigated in human alveolar (A549) and bronchial (BEAS-2B) cells exposed to 1-40µg ml($^{-1}$) 30 min, 2 and 24h to assess potential pulmonary toxicity. The specific physicochemical properties such as crystallinity, NP size and shape, agglomerate size, surface charge and specific surface area (SSA) were analysed. Cytotoxic effects were studied by evaluating cell viability using the WST1 assay and membrane damage using LDH analysis. Direct/oxidative DNA damage was assessed by the Fpg-comet assay and the inflammatory potential was evaluated as interleukin (IL)-6, IL-8 and tumour necrosis factor (TNF)-α release by enzyme-linked immunosorbant assay (ELISA). In A549 cells no significant viability reduction and moderate membrane damage, only at the highest concentration, were detected, whereas BEAS-2B cells showed a significant viability reduction and early membrane damage starting from 10 µg ml($^{-1}$). Direct/oxidative DNA damage at 40 µg ml($^{-1}$) and increased IL-6 release at 5 µg ml($^{-1}$) were found only in A549 cells after 2h. The secretion of pro-inflammatory cytokine IL-6, involved in the early acute inflammatory response, and oxidative DNA damage indicate the promotion of early and transient oxidative-inflammatory effects of tested TiO$_2$-NPs on human alveolar cells. The authors concluded that the findings show a higher susceptibility of normal bronchial cells to cytotoxic effects and higher responsiveness of transformed alveolar cells to genotoxic, oxidative and early inflammatory effects induced by tested TiO$_2$-NPs. This different cell behaviour after TiO$_2$-
NPs exposure suggests the use of both cell lines and multiple end-points to elucidate NP toxicity on the respiratory system.


**Refractory Primary Hepatic Actinomycosis with Direct Infiltration to the Diaphragm and Thorax: The Usefulness of Contrast-enhanced Ultrasonography**

**2014-11-11**

An 80-year-old man was admitted to our hospital with a diagnosis of primary hepatic actinomycosis determined based on a percutaneous aspiration biopsy. The abscesses and state of liquefaction were easily and effectively visualised on contrast-enhanced ultrasonography. Ampicillin/sulbactam was administered; however, lesions of hepatic actinomycosis suddenly infiltrated the diaphragm and right thorax six months later. A drainage tube was inserted into the right thoracic space, and the pleural effusion gradually decreased. The patient received continuous antibiotic therapy for nearly two years and remained free of hepatic actinomycosis on follow-up more than one year later.


**Comparison between the robo-horse and real horse movements for hippotherapy**

**2014-11-11**

While the novel robotic hippotherapy system has gradually gained clinical application for therapeutic intervention on postural and locomotor control in individuals with neurological or musculoskeletal impairments, the system’s validity and reliability for the robotic hippotherapy system has not been well established. The objective of the current study was to investigate the validity and test-retest reliability of the robotic hippotherapy system by comparing with real horse movements. The 3-axis accelerometer sensors attached on the robotic and real horse saddles were used to collect 3-dimensional acceleration data at a preferred walking
Although sodium valproate (VPA) remains the most effective antiepileptic for generalised and unclassified epilepsies, clinicians may be failing to discuss this treatment option because of guideline misinterpretation. Current guidelines recommend caution regarding teratogenic risks but do not advocate absolute avoidance. In this study, the authors assessed VPA prescribing in young people attending a transition epilepsy clinic. Six patients with idiopathic generalised epilepsy (IGE) in whom VPA had been initially avoided were examined. Overall, the results were consistent with VPA’s superior antiepileptic efficacy and ability to reduce harmful seizure-related complications. Young people denied of VPA showed prolonged periods of poor seizure control with medical, social and psychological complications. Following contraceptive counselling and VPA introduction, all six patients showed improved seizure control including seizure-freedom during follow-up of up to twenty-four months. There was also evidence of reduced seizure-related morbidity and improved educational and occupational functioning. Prior to referral, documentation revealed no discussion of VPA treatment options. The authors concluded that failure to prescribe valproate for IGE, particularly when another first-line treatment has failed, may not be in a young woman’s best interests-particularly when they are most vulnerable to sequelae from uncontrolled seizures. Indiscriminate avoidance of valproate needs to be recognised as a misinterpretation of current epilepsy guidelines as it may harm young people. Although the use of valproate demands careful consideration,
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there remains a strong case to always discuss this medication because of its efficacy and potential to reduce seizure-related harm. Patients must be allowed to make their own informed decisions about effective epilepsy treatments.

Authors: Mole TB, Appleton R, Marson A.


OCCUPATIONAL RESEARCH

A review of the evidence for occupational exposure risks to novel anticancer agents - A focus on monoclonal antibodies

Evidence of occupational exposure risks to novel anticancer agents is limited and yet to be formally evaluated from the Australian healthcare perspective. From March to September 2013 medical databases, organisational policies, drug monographs, and the World Wide Web were searched for evidence relating to occupational exposure to monoclonal antibodies, fusion proteins, gene therapies, and other unclassified novel anticancer agents. Australian legislation, national and international guidelines, and drug company information excluded novel agents or provided inconsistent risk assessments and safe handling recommendations. Monoclonal antibody guidelines reported conflicting information and were often divergent with available evidence and pharmacologic rationale demonstrating minimal internalisation ability and occupational exposure risk. Despite similar physiochemical, pharmacologic, and internalisation properties to monoclonal antibodies, fusion proteins were included in only a minority of guidelines. Clinical directives for the safe handling of gene therapies and live vaccines were limited, where available focusing on prevention against exposure and cross-contamination. Although mechanistically different, novel small molecule agents (proteasome inhibitors), possess similar physiochemical and internalisation properties to traditional cytotoxic agents warranting cytotoxic classification and handling. the authors concluded that novel agents are rapidly emerging into clinical practice, and healthcare personnel have few resources to evaluate risk and provide safety recommendations. Novel agents possess differing physical, molecular and
An integrated approach was developed to assess exposure and health-risk from polycyclic aromatic hydrocarbons (PAHs) contained in oil mists in a fastener manufacturing industry. One previously developed model and one new model were adopted for predicting oil mist exposure concentrations emitted from metal work fluid (MWF) and PAHs contained in MWF by using the fastener production rate (Pr) and cumulative fastener production rate (CPr) as predictors, respectively. By applying the annual Pr and CPr records to the above two models, long-term workplace PAH exposure concentrations were predicted. In addition, true exposure data was also collected from the field. The predicted and measured concentrations respectively served as the prior and likelihood distributions in the Bayesian decision analysis (BDA), and the resultant posterior distributions were used to determine the long-term exposure and health-risks posed on workers. Results show that long term exposures to PAHs would result in a 3.1%, 96.7%, and 73.4% chance of exceeding the PeL-TWA (0.2 mg/m³), action level (0.1 mg/m³), and acceptable health risk (10-3), respectively. In conclusion, preventive measures should be taken immediately to reduce workers’ PAH exposures.

Authors: Hsu HI, Lin MY, Chen YC, Chen WY, Yoon C, Chen MR, Tsai PJ.

What are the health costs of uranium mining? A case study of miners in Grants, New Mexico

Uranium mining is associated with lung cancer and other health problems among miners. Health impacts are related with miner exposure to radon gas progeny. This study estimates the health costs of excess lung cancer mortality among uranium miners in the largest uranium-producing district in the USA, centred in Grants, New Mexico. Lung cancer mortality rates on miners were used to estimate excess mortality and years of life lost (YLL) among the miner population in Grants from 1955 to 2005. A cost analysis was performed to estimate direct (medical) and indirect (premature mortality) health costs. Total health costs ranged from $2.2 million to $7.7 million per excess death. This amounts to between $22.4 million and $165.8 million in annual health costs over the 1955-1990 mining period. Annual exposure-related lung cancer mortality was estimated at 2185.4 miners per 100,000 with a range of 1419.8-2974.3 per 100,000. The author concluded that given renewed interest in uranium worldwide, results suggest a re-evaluation of radon exposure standards and inclusion of miner long-term health into mining planning decisions.

Author: Jones BA.


Incidence of ambulatory care visits after needlestick and sharps injuries among healthcare workers in Taiwan: A nationwide population-based study

Healthcare professionals have a high risk of needlestick and sharps injuries (NSIs), which have a high potential for disease transmission. Ambulatory care follow up is essential, but is usually overlooked. This study aimed to investigate the annual and cumulative (age-, sex-, and subtype-specific) incidences of ambulatory care visits after NSIs. This study was also designed to evaluate the incidences of blood-borne diseases associated with NSIs among Taiwanese health professionals in Taiwan between 2004 and 2010. Data were obtained from the National Health Insurance Research Database, which contains anonymised records representing approximately 99% of the Taiwan population. A total of 4443 nurse healthcare workers (NHCWs) and 3138 non-nurse healthcare workers (NNHCWs), including physicians, medical technologists, and other
This study aims to determine the effectiveness, cost-effectiveness, acceptability, and feasibility of: a community health worker (CWH) intervention and PMTCT Option B in improving ANC and PMTCT outcomes for mother-to-child HIV transmission.

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health professionals were included in this longitudinal study. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. The Mantel-Haenszel method was used to adjust for sex, age, and type of affiliation. Results showed that the annual incidence of ambulatory care visits of NHCWs increased from 0.7% in 2004 to 1.9% in 2010; this incidence was significantly higher than that of NNHCWs (from 0.3% in 2004 to 0.5% in 2010) in any yearly comparison (p<0.05). The sex-adjusted 7-year cumulative incidence rate was 3.23 (95% CI=1.23-8.45) in males and 3.92 (95% CI=2.70-5.69) in females (p<0.05). The age-adjusted 7-year cumulative incidence rate was 2.74 (95% CI=1.99-3.77) and 2.14 (95% CI=1.49-3.07) in subjects ≤30 and ≥31 years old, respectively (p<0.0005). The affiliation-adjusted 7-year cumulative incidence rate was 1.89 (95% CI=1.21-2.94) in medical centres and 3.33 (95% CI=2.51-4.41) in nonmedical centres (p<0.01). In conclusion, NSIs increased steadily from 2004 to 2010 in Taiwan with NHCWs having higher NSIs incidences than NNHCWs. A routine ambulatory care visit after NSIs can prevent blood-borne transmission, especially for NHCWs. Educational programs may be helpful for reducing the incidence of NSIs and increasing ambulatory care visit ratios after NSIs.

Authors: Wang SG, Hung CT, Li SF, Lu YC, Chang SC, Lee HM, Pai LW, Lai FI, Huang YW, Chung YC.

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Evaluation of a community health worker intervention and the World Health Organization’s Option B versus Option A to improve antenatal care and PMTCT outcomes in Dar es Salaam, Tanzania: study protocol for a cluster-randomised controlled health systems implementation trial

2014-11-11

Mother-to-child transmission of HIV remains an important public health problem in sub-Saharan Africa. As HIV testing and linkage to PMTCT occurs in antenatal care (ANC), major challenges for any PMTCT option in developing countries, including Tanzania, are delays in the first ANC visit and a low overall number of visits. Community health workers
This study analysed the concentrations of polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and dioxin-like polychlorinated biphenyls (dl-PCBs) in surface sediment from selected sites in Lake Victoria.

PUBLIC HEALTH RESEARCH

Dioxin-like PCBs and PCDD/Fs in surface sediments near the shore of Winam Gulf, Lake Victoria

2014-11-11

Winam Gulf of Lake Victoria is considered to be contaminated with toxic chemicals emanating from anthropogenic activities, especially near large industrial towns such as Kisumu. This has recently caused concerns about its water quality and impact on aquatic organisms and human beings. This study was justified by the need to generate baseline concentrations of polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated...
The present study determined the concentration of perfluoroalkyl substances in plasma samples from Danish school children.

PFAS concentrations in plasma samples from Danish school children and their mothers

Perfluoroalkyl substances (PFASs) are accumulating in our environment and human exposure to these potentially harmful chemicals are of growing concern. In the present study, 116 children aged 6-11 and 143 mothers in two locations in Denmark donated blood samples as a supplement to their participation in the large European human biomonitoring project, DEMOCOPHES (Demonstration of a study to Coordinate and Perform Human Biomonitoring on a European Scale). The blood samples were analysed by LC-MS/MS for the concentration of six PFASs: PFOA, PFHxS, PFNA, PFDA, br-PFOS and n-PFOS. All measured compounds were above the detection limit in both mothers and children except for PFHxS in one child. There was a significant correlation between the levels in children and their mothers, indicating a family-related exposure pattern. However, we also found that the levels of PFOA, PFNA, PFDA, br-PFOS and total-PFOS were significantly higher in children compared to their mothers. This may be due to higher exposure in children through for example dust and soil, and due to the fact that...
children are smaller in body size and blood volume and hence have a lower storage capacity. Furthermore, the authors found an association between plasma levels and the age of the mothers and higher levels of plasma PFASs in mothers with low parity. There were no associations between PFAS concentrations and residential area, dietary habits of the participants or with respect to the birth order of the children. The levels are comparable to concentrations found in other Western countries.

Authors: Mørck TA, Nielsen F, Nielsen JK, Siersma VD, Grandjean P, Knudsen LE.


Environmental chemicals mediated the effect of old housing on adult health problems: US NHANES, 2009-2010

Housing conditions affect occupants continuously, and health interventions have shown a positive association between housing investment or improvement and occupant’s health. However, the sources of the housing problems were less understood. Since it was observed that lead dust and chloroanisoles released from housing (materials) as indoor pollutants affected child’s health, the authors now aimed to examine the relationships among built year, environmental chemicals and individual health in adults in a national and population-based setting. Data were retrieved from the US National Health and Nutrition Examination Survey, 2009-2010, including demographics, housing characteristics, self-reported health status, biomarkers and blood and urinary chemical concentrations. Adults aged 20 and above were included for statistical analysis (n=5,793). Analysis involved chi-square test, t test, and survey-weighted general linear regression and logistic regression modelling. People who resided in older housing built before 1990 tended to report chronic bronchitis, liver problems, stroke, heart failure, diabetes, asthma and emphysema. Higher values in HDL cholesterol, blood lead and blood cadmium and having positive responses of hepatitis A, B, C and E antibodies among occupants were also observed. Furthermore, higher environmental chemical concentrations related to old housing including urinary cadmium, cobalt, platinum, mercury, 2,5-dichlorophenol and 2,4-dichlorophenol concentrations and mono-cyclohexyl phthalate and mono-isobutyl phthalate metabolites were shown in occupants as well. Older housing
In this study, the authors describe key issues that affect epidemiology studies using biomonitoring data on short-lived chemicals and propose a systematic instrument - the Biomonitoring, Environmental Epidemiology, and Short-lived Chemicals (BEES-C) instrument - for evaluating the quality of research proposals and studies that incorporate biomonitoring data on short-lived chemicals.
This study investigated the haemostatic efficacy of seven commercially available haemostats in the presence of toxic chemicals (soman, VX, sulphur mustard, petrol, aviation fuel and motor oil).

Development of haemostatic decontaminants for the treatment of wounds contaminated with chemical warfare agents: Evaluation of in vitro clotting efficacy in the presence of certain contaminants.

2014-11-11

The treatment of penetrating, haemorrhaging injuries sustained within a hazardous environment may be complicated by contamination with toxic chemicals. There are currently no specific medical countermeasures for such injuries. Haemostats with an absorbent mechanism of action have the potential to simultaneously stop bleeding and decontaminate wounds. However, a primary requirement of a ‘haemostatic decontaminant’ is the retention of clotting function in the presence of chemical contaminants. Thus, the aim of this study was to investigate the haemostatic efficacy of seven commercially available haemostats in the presence of toxic chemicals (soman, VX, sulphur mustard, petrol, aviation fuel and motor oil). Clot viscosity was assessed ex vivo using thrombelastography following treatment of pig blood with: (i) toxic chemical; (ii) haemostat; or (iii) haemostat in combination with toxic chemical. Several contaminants (VX, petrol and GD) were found to be pro-haemostatic and none had an adverse effect on the rate with which the test products attained haemostasis. However, the total clot strength for blood treated with certain haemostats in the presence of sulphur mustard, soman and petrol was significantly decreased. Three test products failed to demonstrate haemostatic function in this ex vivo (thrombelastography) model; this was tentatively ascribed to the products achieving haemostasis through a tamponade mechanism of action, which can only be replicated using in vivo models. The authors concluded that overall, this study has identified a number of commercial products that

and they hope and anticipate that the instrument will initiate further discussion/debate on this topic.


may have potential as haemostatic decontaminants and warrant further investigation to establish their decontaminant efficacy.

Authors: Hall CA, Lydon HL, Dalton CH, Chipman JK, Graham JS, Chilcott RP.