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Convention on the Marking of Plastic Explosives for the Purpose of Detection

Introduction

2.1 The *Convention on the Marking of Plastic Explosives for the Purpose of Detection (Montreal, 1 March 1991)* (the Convention) is administered by the International Civil Aviation Organization (ICAO) and was drafted in response to the 1988 bombing of PAN Am Flight 103 over Lockerbie, Scotland[1] which claimed 270 lives.[2]

2.2 United Nations (UN) Security Council resolution 1373 of 28 September 2001 urges States to become parties to the relevant conventions and protocols relating to terrorism.[3] Should Australia accede to this Convention, it will be party to all 13 of the UN's conventions and protocols on terrorism.[4]

2.3 The Committee was informed that accession to the Convention would signify Australia's continuing commitment to combating the threat of global terrorism and further strengthen Australia's reputation as an authority on counter terrorism initiatives, particularly in the Asia-Pacific region.[5]

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1 National Interest Analysis (NIA), paras 1-3.

2 Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 8.

3 NIA, para. 5.

4 Mr Geoffrey McDonald, *Transcripts of Evidence*, 7 November 2005, p. 7 and 27 February 2006 p. 31.

5 NIA, para. 5; Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 7.

Background

2.4 In drafting the Convention, the international community was concerned that plastic explosives had been used in terrorist acts aimed at the destruction of aircraft and other targets.[6]

2.5 The international community was of the view that the marking of plastic explosives makes them more easily identifiable and detectable, thereby inhibiting their improper and unlawful use.[7]

2.6 Broadly, the Convention provides for the monitoring, regulation, manufacture, possession, import and export of plastic explosives internationally.[8]

Obligations under the Convention

2.7 As signatory to the Convention, Australia is required to:

- use one of the four ICAO recommended[9] chemical detection agents[10] in its minimum concentration[11] to mark plastic explosives
- prohibit and prevent the manufacture in its territory, and the movement into and out of its territory of unmarked plastic explosives[12]
- take necessary measures to destroy, as soon as possible, unmarked plastic explosives manufactured upon the Convention's entry into force.[13]

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6 NIA, para. 4.

7 NIA, para. 4; Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 8.

8 Mr Geoffrey McDonald, *Transcript of Evidence*, 27 February 2006, p. 31.

9 NIA, para. 14.

10 ICAO recommends 2,3-dimethyl-2,3-dinitrobutane (DMNB) as the most effective odorant for marking plastic explosives. NIA, para. 14; Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 8.

11 A recent amendment to Part 2 of the Technical annex, effective from 19 December 2005, increases the minimum concentration of DMNB from 0.1% to 1.0%. The other amendment, which came into effect on 27 March 2002, deleted ortho-Mononitrotoluene from the list of detection agents in the Table of the Technical Annex of the Convention. NIA, para. 15; Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 8.

12 Obligations under the Convention apply to explosives formulated with one or more high explosives, which in their pure form have a vapour pressure less than 10^{-4} Pa at a temperature of 25^{o}C, are formulated with a binder material, and are, as a mixture malleable or flexible at room temperature. NIA, para. 8.

Control of existing stocks of plastic explosives

2.8 The Convention obliges States to exercise strict and effective control of the possession and transfer of existing stocks of unmarked plastic explosives.[14]

2.9 Existing stocks of unmarked plastic explosives must be either consumed, destroyed, marked or rendered permanently ineffective, consistent with obligations under the Convention within a period of:

- 3 years[15] for those stocks of unmarked plastic explosives not held by authorities performing military functions
- 15 years[16] for those stocks of unmarked plastic explosives held by authorities performing military functions that are not incorporated as an integral part of duly authorised military devices[17]
- as soon as possible[18] for those stocks of unmarked plastic explosives that do not fall within the categories of exemptions for unmarked plastic explosives as described below.[19]

Categories of exemptions for unmarked plastic explosives

2.10 Exemptions under the Convention apply to those unmarked plastic explosives that continue to be manufactured or held in limited quantities for:

- authorised research and development
- testing of new or modified explosives
- authorised training in explosives detection
- development or testing of explosives detection equipment
- authorised forensic purposes.[20]

13 NIA, para. 13.
14 NIA, para. 16.
15 From the date of the Convention's entry into force for Australia. NIA, para. 17.
16 From the date of the Convention's entry into force for Australia. NIA, para. 18.
17 NIA, paras 17-18.
18 NIA, para. 19.
19 NIA, para. 12.
20 NIA, para. 9.

2.11 A further exemption applies to those unmarked plastic explosives that are to be designated or are incorporated as an integral part of an authorised military device within 3 years[21] of the Convention's entry into force.[22]

International Explosives Technical Commission

2.12 The Convention establishes the International Explosives Technical Commission consisting of 15 to 19 expert members[23] appointed by ICAO to implement the Convention. The Commission provides technical assistance and facilitates the exchange of information relating to technical developments in the marking and detection of plastic explosives between States Parties. States Parties are required to keep ICAO informed of measures they have taken to implement the provisions of the Convention.[24]

Dispute resolution

2.13 The Convention provides that a dispute between States Parties which cannot be settled through negotiation is required to be submitted to arbitration. If within six months of undergoing arbitration, the dispute remains unresolved, it may be referred to the International Court of Justice.[25]

2.14 A State Party may at the time of its accession to the Convention, declare itself not bound by the dispute resolution process. Australia does not intend to make such a declaration and so will be bound by the dispute resolution process under the Convention.[26]

Detecting marked and unmarked plastic explosives

2.15 The Committee was informed that there have been concerns raised about the ability of current technology to detect marked plastic explosives. Based on evidence received, the Committee initially held

21 Explosives produced within 3 years after the Convention's entry into force are deemed to be duly authorised military devices. NIA, para. 10.

22 NIA, para. 10.

23 Members shall be experts having direct and substantial experience in matters relating to the manufacture or detection of, or research in explosives. NIA, para. 21.

24 NIA, para. 23.

25 NIA, para. 24.

26 NIA, para. 25.

similar concerns in particular with respect to detecting both marked and unmarked plastic explosives.

2.16 Subsequently, the Committee received additional evidence that Australian ports have equipment in place that can detect trace or bulk explosives. This technology includes approximately 85 X-ray machines ranging in size which can detect the shape and density of explosives:

- 4 large sea cargo container X-ray units
- 5 pallet X-ray units
- 18 mobile X-ray vans
- the rest are cabinet X-ray units at airports and mail centres.[27]

2.17 Another three types of equipment detect explosive residue with the exclusion of chemical markers and include:

- 41 ion mobility spectrometers (IOS) that can detect explosives and narcotics
- 5 specialised machines based on selected ion flow tube mass spectrometry (SIFT-MS)[28]
- 10 units of an antibody-based detector machine, complementary to IOS used to confirm IOS readings, the antibody-based detector has a much lower false-positives rate.[29]

2.18 A further set of specialised mass spectrometer machines can detect a range of volatile organic compounds and are used at sea cargo examination facilities. The manufacturer of the machine has informed the Australian Customs Service (Customs) that the machine may be programmed to test chemical markers, which Customs will explore further.[30]

2.19 In relation to technology which potentially can detect chemical markers within plastic explosives, Customs stated:

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27 Ms Roxanne Kelley, *Transcript of Evidence*, 27 February 2006, p. 33.

28 This machine may detect DMNB, o-MNT and p-MNT, the prescribed markers included in the Technical annex to the Convention. Attorney-General's Department, *Submission 10.1*, p. 1.

29 Ms Roxanne Kelley, *Transcript of Evidence*, 27 February 2006, p. 33.

30 Ms Roxanne Kelley, *Transcript of Evidence*, 27 February 2006, p. 33.

> In terms of our range of technology for explosives, we have finalised an evaluation of some automatic explosive detection X-ray machines. We are going to deploy them at the Sydney and Melbourne postal facilities. We have also heard that another company has indicated that it has a product which can detect some markers or taggants. We have not tested that bit of equipment. Until we do, using our independent scientists to do a full evaluation, we would not feel comfortable to say that the machine is suitable for this purpose.[31]

2.20 The Committee also heard that Australian ports can detect plastic explosives but cannot at point of entry detect chemical markers or taggers. The current internationally accepted practice for identifying chemical markers is through laboratory testing. No country currently uses technology to detect chemical markers at international points of entry.[32] Customs informed the Committee:

> We have checked with other customs administrations and had a discussion with the FBI[33] around their process for markers and taggants. Our understanding is that their process is exactly the same as ours. They have technology capable of detecting the explosives but then they send the explosives to a laboratory for the marker and taggant to be identified. That seems to be the international process at the moment. Laboratories are used to identify the taggants and markers.[34]

2.21 In further evidence presented to the Committee, the Hon Philip Ruddock MP, Attorney-General confirmed that it is currently not the practice to look for the odorant DMNB at Australian ports:

> The Committee has previously been advised that the positive identification and quantitation of explosive markers would be undertaken by a fully accredited forensic laboratory such as the National Measurement Institute (NMI). This testing would be undertaken in line with the proposed regulatory approach outlined by the officials from the Australian Customs Service and [the Attorney-General's Department] at the Committee's [public hearing] on 27 February 2006.

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31 Ms Roxanne Kelley, *Transcript of Evidence*, 27 February 2006, pp. 33-34.

32 Ms Roxanne Kelley, *Transcript of Evidence*, 27 February 2006, p. 37.

33 The United States of America's Federal Bureau of Investigation.

34 Ms Roxanne Kelley, *Transcript of Evidence*, 27 February 2006, p. 34.

> The detection of the chemical marker in the plastic explosive by an accredited laboratory would assist in the enforcement of the offence provisions provided for in the *Law and Justice Legislation and Amendment (Marking of Plastic Explosives) Bill 2006*.[35]

2.22 One issue surrounding the detection of the preferred odorant DMNB, which under the Convention would be included in plastic explosives, is that DMNB is volatile. The rate at which DMNB vaporises after it is combined with plastic explosive is as yet unknown. There is concern that the plastic explosive (to which DMNB has been added) could therefore remain viable longer than the odorant.[36] At the Committee's first hearing, the Department of Defence informed the Committee:

> [DMNB] is supposed to be homogenous throughout the [plastic explosive] material – and it certainly is at the time of manufacture – but obviously, there will be a gradient created within the material over time as the volatile substance burns off from the outside and inwards. The technical data is not yet comprehensive enough to tell us how quickly that will occur.[37]

2.23 To overcome this issue the Convention stipulates a large increase in the minimum concentration of DMNB to 1%. The Attorney-General's Department confirmed this at a later hearing:

> … there was mention of the increase of the amount of [DMNB] in the plastic explosives. The purpose of that is to make sure the marker stays in it for a longer period of time. That was the main reason the percentage was increased.[38]

2.24 The Committee was concerned that it had received conflicting evidence regarding the purpose of the odorant DMNB. On the one hand, in response to a question taken on notice from the Chair -

> *Was it ever the intention of the treaty that the odorant would be to find the explosive or is the odorant to identify where the explosive has come from?*

35 Attorney-General's Department, *Submission 10.5*, p. 2.
36 Mr Wayne Hayward, *Transcript of Evidence*, 7 November 2005, p. 14.
37 Mr Wayne Hayward, *Transcript of Evidence*, 7 November 2005, p. 11.
38 Mr Geoffrey McDonald, *Transcript of Evidence*, 27 February 2006, p. 37.

2.25 The Attorney-General's Department responded with:

> The intention of the Convention was to require a chemical detection agent to be incorporated into the plastic explosive in order to identify the presence of a plastic explosive, not to be able [to] identify the source of the manufacture of the plastic explosive.[39]

2.26 In further evidence presented to the Committee, the Attorney-General clarified the purpose of adding DMNB to plastic explosive:

> The chemical DMNB, is one of four types of chemical markers which are prescribed by the Technical Annex to the Convention as required to be incorporated into a plastic explosive.
>
> The original idea of the Convention was to use marking to improve detection of plastic explosives. Although methods of detecting plastic explosives have improved since 1991, the Convention has utility in other respects.
>
> For example, all but a handful of countries in the world have now marked their plastic explosives in line with the Convention. The Convention provides a way of distinguishing between explosives that come from legitimate sources as opposed to the black market. While [the] marker itself does not extend to forensically identifying the exact source of the explosives, the requirement to mark plastic explosives provides police with a useful charge in the event that there is uncertainty about the exact source of a plastic explosive and it is clear that a plastic explosive is not marked.[40]

2.27 On the other hand, the Committee also discovered that while the odorant DMNB was proposed originally to aid in the detection of plastic explosives, it could also be used, after detonation, to identify where an explosive was manufactured.[41] The Attorney-General's Department confirmed that Switzerland is the only major industrial country that currently incorporates chemical taggers into explosives from which the manufacturer and approximate date of manufacture can be identified post blast.[42]

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39 Attorney-General's Department, *Submission 10.3*, p. 1.

40 Attorney-General's Department, *Submission 10.5*, p. 1.

41 Mr Wayne Hayward, *Transcript of Evidence*, 7 November 2005, p. 15.

42 Attorney-General's Department, *Submission 10.3*, p. 1.

2.28 The Committee also heard that the Defence Science and Technology Organisation (DSTO) is currently researching the marking of plastic explosives with a view to improving technology in this area. This research will be ongoing once DMNB is incorporated into the manufacture of plastic explosives.[43] The Committee also received evidence that the National Institute of Forensic Science (NIFS) is researching the tagging of explosives[44] while the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is conducting research into detection equipment.[45]

2.29 Once the Convention is in place and in the lead up to the implementation of relevant legislation, the Australian Government will consider the purchase of specialised screening equipment that can detect DMNB.[46]

Costs

2.30 A significant quantity of plastic explosive is produced and consumed annually in Australia. Over the next few years, a war reserve stock will be accumulated. Accession to the Convention would impact on the manufacturing process, stores management and transport costs of plastic explosive.[47]

2.31 The Australian Government considers the most economical way to give effect to the obligations of the Convention is to require the incorporation of DMNB into plastic explosives at the time of manufacture.[48] This would significantly reduce the costs associated with ongoing monitoring and regulation of stocks of plastic explosive over their life.[49]

2.32 Costs of accession to the Convention are estimated at $500 000 with an annual recurring cost of $1.125 million. The Department of Defence and the principal Australian manufacturer of plastic explosives, ADI

43 Mr Wayne Hayward, *Transcript of Evidence*, 7 November 2005, p. 14.

44 NIA, Consultation Annex, para. 4b.

45 Mr Wayne Hayward, *Transcript of Evidence*, 7 November 2005, p. 17.

46 Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 11.

47 NIA, para. 32.

48 As Australia does not produce DMNB, it would be imported and incorporated as a liquid into plastic explosive at the manufacturing stage at a cost of approximately $5.50 for each unit of plastic explosive. Wayne Hayward, *Transcript of Evidence*, 7 November 2005, p. 11.

49 NIA, para. 34.

Limited, will bear the most significant financial burden in complying with the terms of the Convention.[50]

2.33 There may also be a cost impact from occupational health and safety management issues associated with adding DMNB to plastic explosives. However, the Committee received evidence that ADI Limited already has in place strict safety standards in the manufacture and operation of hazardous materials.[51]

2.34 Other costs to Australia include the regulation and monitoring of marked plastic explosives through border security under Custom's control.[52]

2.35 The proposed amendments to the *Criminal Code Act 1995* (Cth) are likely to require technology to allow it to determine whether imported or exported plastic explosives are marked or not at a cost of about $1 million per unit. Multiple units would be needed in ports[53] around Australia.[54]

2.36 Additional costs would include: maintaining and operating equipment, staff training, laboratory testing of plastic explosives to measure marker concentration, obtaining a capability to detect markers that are currently difficult or impossible to detect and handle, and transporting and storing plastic explosives.[55]

2.37 When asked further about the cost of equipment, the Attorney-General's Department informed the Committee that the exact costs of equipment were presently unknown:

> There are issues about how many we need and the like. We cannot give any further information on that at this time. You would appreciate that, at that sort of cost, this is not an inexpensive thing. On the other hand, the cost in lives and property damage in the event of something going wrong in this area would be very considerable.[56]
>
> The truth of it is that there are budget processes. That always makes it more difficult for me to talk about the global

50 NIA, para. 33.

51 NIA, para. 35.

52 NIA, para. 36.

53 'Ports' refers to international points of entry and does not include regional airports. Mr Paul Hill, *Transcript of Evidence*, 7 November 2005, pp. 17 & 20.

54 NIA, para. 37.

55 NIA, para. 37.

56 Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 15.

> coverage of this. Also, in relation to equipment, there is often quite a deal of discussion between our various departments and the department of finance about the most economical way to go.[57]

2.38 The Attorney-General added to comments provided to the Committee by the Attorney-General's Department at its first public hearing on the treaty:

> [In reference]… to evidence provided to the Committee on 7 November 2005, by an officer from my Department concerning budgetary issues. The officer was correct in advising that he was not at liberty to disclose the outcome of budget deliberations. However, the officer was alluding to the fact that the cost was likely to be substantially less than the original estimate put forward in the National Interest Analysis because appropriate regulation can be achieved without the purchase of specific equipment. The officer has already indicated that there is equipment at the airport to detect explosives including plastic explosives, that equipment also exists which can be calibrated to detect chemical markers and that through utilisation of that equipment and further laboratory testing, there will be adequate protection to the public.[58]

2.39 Customs stated that new technology may not be required to identify marked plastic explosives. There could instead be a reliance on written permission issued for the goods providing a cost saving.

> … if any goods appeared at the border which did not have the required permission, Customs would be able to seize those goods as prohibited imports. It would also mean that we would not have to intervene with every movement of plastic explosives across the border. That obviously has an impact on trade, on legitimate companies that use plastic explosives, on the Department of Defence and so forth.
>
> Even if there was a permission to import that we had reasonable suspicions about, we would be able to hold the goods and conduct tests on them – perhaps through a

57 Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 17.

58 Attorney-General's Department, *Submission 10.5*, p. 2.

> laboratory – to confirm that they did meet the conditions of the permission to import.[59]

2.40 On the use of detection equipment Customs added:

> We need to factor in that technology is not going to solve all the problems. Because of that understanding, Customs is putting into place a layered approach. Part of what we were talking about with the permit-issuing approach, combined with our capacity to detect explosives is that it provides more of a safeguard than just spending a whole heap more money on technology.[60]

2.41 Costs where permissions would be required would include: laboratory testing of plastic explosives to measure marker concentration, handling, transporting and storing plastic explosives, preparation and consideration of applications to import or export plastic explosives. Applicants would incur a further cost in preparing applications seeking import or export permission.[61]

Consultation

2.42 The Attorney-General's Department consulted extensively with a number of Commonwealth Government Departments,[62] State and Territory Police, private sector manufacturers[63] and users of plastic explosives. The details of the Convention were also provided to the Commonwealth-States/Territories Standing Committee on Treaties.[64]

2.43 All responses received from Police Commissions advised of the stocks of plastic explosives held by each State and Territory and supported Australia's accession to the Convention.[65]

2.44 The Australian Bomb Data Centre of the Australian Federal Police (AFP) noted that marking plastic explosives would be effective from a

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59 Mr Tim Chapman, *Transcript of Evidence*, 27 February 2006, p. 32.

60 Ms Roxanne Kelley, *Transcript of Evidence*, 27 February 2006, p. 36.

61 NIA, para. 38.

62 The Department of Prime Minister and Cabinet, the Department of Defence, the Department of Foreign Affairs and Trade, the Department of Transport and Regional Services and the Australian Customs Service. NIA, Consultation Annex.

63 The Attorney-General's Department consulted ADI Limited, Brandrill Limited, Adele Enterprises and Quin Investments. NIA, Consultation Annex.

64 NIA, Consultation Annex, para. 2.

65 NIA, Consultation Annex, para. 4.

law enforcement perspective if marking enabled the identification by batch of the explosive. It was noted however, that plastic explosives represented only a small part of the international explosive inventory, therefore, consideration should be given to the marking of all explosives. The AFP also drew attention to NIFS research on the tagging of explosives.[66]

2.45 Of the private sector producers or consumers of plastic explosives, Applied Explosives Technology (AET) advised that they use PE4[67] in their research and development and in some fully manufactured articles. AET advised that the cost of DMNB is US$240 per kilogram and that they had recently been involved in testing the effects of different DMNB concentrations in PE4 as part of NIFS and DSTO research.[68]

Implementation

2.46 The Australian Government has made available to the Committee an exposure draft of the main legislative instrument that will implement the obligations under the Convention, the *Law and Justice Legislation Amendment (Marking of Plastic Explosives) Bill 2005*.[69]

2.47 The *Criminal Code Act 1995* (Cth) will also be amended to incorporate Australia's obligations under the Convention. The *Customs Act 1901* (Cth), *Customs (Prohibited Imports) Regulations 1956* (Cth) and *Customs (Prohibited Exports) Regulations 1958* (Cth) will be amended to provide Customs and its officers with the necessary powers to give effect to the terms of the Convention.[70]

2.48 As State and Territory legislation dealing with plastic explosives already exists, the Australian Government does not envisage the need for State provisions within the legislation.[71]

2.49 The legislation would commence immediately upon Royal Assent. However, a proposed provision within the legislation provides for a

66 NIA, Consultation Annex, para. 4b.
67 PE4 is a type of plastic explosive.
68 NIA, Consultation Annex, para. 8.
69 Attorney-General's Department, *Submission 10.2*, p. 1.
70 NIA, Consultation Annex, paras 26-30.
71 Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 9.

12-month delay for commencement for manufacturers of plastic explosive.[72]

Entry into force and withdrawal

2.50 The Convention has been in force generally since 21 June 1998. There are currently 123 Parties to the Convention.[73] Pursuant to Article XIII(4), the Convention will enter into force for Australia sixty days after deposit of instrument of accession with ICAO.[74]

2.51 Australia has delayed acceding to the Convention as other terrorism related legislation has taken priority.[75] However, the Committee was informed that the Australian Government has, over the last four years, solidly pursued the international obligations under the treaty.[76]

2.52 As a manufacturer of explosives, Australia is classified as a 'Producer State' under the Convention and is obliged at the time of depositing its instrument of accession to officially declare its status.[77]

2.53 Any States Party may withdraw from the Convention by written notification to ICAO with formal withdrawal taking effect 180 days on receipt of notification.[78]

Conclusion

2.54 The Committee is supportive of further research being undertaken by DSTO, NIFS, CSIRO and Customs in the area of marking, tagging and detecting plastic explosives, but remains concerned that the technology in marking and detecting plastic explosives is not yet scientifically exact.

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72 Attorney-General's Department, *Submission 10.1*, p. 1.

73 Canada, New Zealand, the United Kingdom, and the United States of America are also Parties to the Convention; International Civil Aviation Organization, viewed 13 March 2005, <www.icao.int/>.

74 NIA, para. 2.

75 Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 9 & 27 February 2006, p. 38.

76 Mr Geoffrey McDonald, *Transcript of Evidence*, 7 November 2005, p. 9.

77 NIA, para. 20.

78 NIA, paras 45-46.

2.55 However, on balance, the Committee believes the Convention will provide additional impetus for technological development and international technology sharing in marking and detecting plastic explosives.

2.56 The Committee is also of the view that accession to the Convention confirms Australia's commitment to combating the global threat of terrorism, in particular in the Asia-Pacific region.

Recommendation 1

The Committee supports the *Convention on the Marking of Plastic Explosives for the Purpose of Detection* (Montreal, 1 March 1991) and recommends that binding treaty action be taken.