

## SECTION FOUR

### DECONSTRUCTING THE RISK

#### Regulating the Risk

Norms matter in national and international controls, not because they constrain the choices, but because they create the basis for consensus about responses to actions consistent with those norms.<sup>1</sup>

Regulation and control of WMD capabilities is pre-eminently a political process. For widest effect it must be pursued as an element of a domestic security policy and essentially be judged by whether it enhances national security first, and international security second. The control of WMD capabilities must be more than simply an exercise in the regulation of CBR agents, micro-organisms, toxins and radioisotopes and the strict adherence to prescriptive listings of materials. While there is a clear need to define and characterise the full range of WMD capabilities across the threat spectrum, the problems in the control of use and micro-proliferation are also largely determined by the behavioural, social and operational norms of the belligerents involved. Articulating these precepts into coherent and meaningful legislation is predicated, however, on numerous factors. Most important are those factors involving the political imperative to act, the acknowledgement and consensus of a credible threat and the capacity and capability of any counter-measures to deal effectively with WMD threats.

As in the exercise of defining risk, the success of the calibration and estimation process is to be found within the aggregate value of the vulnerabilities and limitations and in what degree the threat will manifest itself. Success will only be realised in the exploitation of elements of risk throughout the non-state capability development process – commonly referred to as a risk advantage. The

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<sup>1</sup> B. Roberts quoted in *The Chemical Weapons Convention: Implementation Challenges and Solutions*, ed J.B. Tucker, Monterey Institute of International Studies, Washington DC, April 2001, p 2.

monograph normally applied to risk focuses on its negative perspective, but in fact it should be viewed also as an opportunity. Measures aimed at exploiting this aspect of risk, however, may often come at the price of personal freedoms and societal advantage. This is commonly an area of major contention, complexity and misunderstanding. The principles and processes that circumscribe democracies and establish societal norms are also the same ones that set significant limits on preventative actions available to counter terrorist activities. This restriction on the range of counter-measures is set against a national landscape of wide ranging expectations that existing WMD and CBR regulatory controls and anti-terrorism measures are commensurate with the current Australian threat environment and are effective in dealing with the range of perceived threats. Consequently, at least prior to the 11 September 2001 mass casualty attacks against the United States, this perceived low risk environment appeared to neither necessitate, nor justify, the need for strengthened national CBR regulatory controls. Indeed, as security fatigue begins to take hold nationally, so too will the perspective that risk must therefore also be diminishing.

In the dynamic risk environment, change is constant and calibrating the effectiveness of controls depends on the capacity within existing regulatory structures to adapt to technological and behavioural change. A risk advantage arises when there is the capacity for the state to exploit aspects of a belligerent organisation's or individual's risk. This is, however, premised on a comprehensive understanding of one's own risk. This section of the thesis will therefore explore those aspects of own risk within the Australian and international regulatory landscape and how these controls measure up to any expectation of preemption and deterrence value. This involves assessing core capacities and where key vulnerabilities, as well as opportunities, may lie. Fundamental to this analysis is the need to examine all aspects of the relevant legislation and controls nationally (Appendices One and Two), that may impact on establishing values and defining vulnerabilities. The section will develop the concept of how regulatory criteria are established and the evidentiary processes that support and enhance their application, such as any enforcement measures. This includes a general comparative analysis of how CBR regulation is directed

against non-state organisations throughout the United States, Canada and the United Kingdom. Underlying all of these preemptive measures is the analysis of deterrence through which risk can be better managed. This section explores both deterrence as a theory and its increasing relevance and advantages in its application within the non-state environment.

### **Expectations of the Regulatory Environment**

Initiatives to criminalise and regulate the types of activities associated with the misuse of CBR capabilities received wide attention following the 1995 use by the Aum Shinrikyo Cult of a sarin nerve agent. Similarly, following the 11 September 2001 terrorist attacks in the United States, there has been an increased focus by governments towards strengthening anti-terrorist and counter-terrorist measures. Despite the initial reactions following these crises, awareness and interest has generally faltered, foundering on issues of definition, uniformity, standardisation and a lack of recognition and understanding of the range and levels of threat and risk. The lack of uniformity, consensus and a wide ranging government and public malaise appears to quickly pervade the corporate memory following any major crisis. Issues of reform and measures of pro-action against these non-state threats are more often conveniently replaced by the domestic political agenda as though it is some form of societal cartharsis. Ironically, the last decade has seen unprecedented and increased development of legislative processes throughout the agricultural, veterinarian, pharmaceuticals, poisons and waste sectors. Most of these measures, however, have failed in further developing wider handling, processing, distribution and security controls for materials, particularly for those applied beyond the point of sale.

Progress towards a comprehensive national strategy is dependent on a balanced and accurate calibration of risk, yet existing national deterrence strategies demonstrate a predominance towards ad hoc legislation and measures applied to environments in which they have little relevancy. Measures are set within a 'constitutional cocktail' of state, territory and federal acts, regulations and agreements, generally within environments that are also dependent on self-regulation and self-assessment. Despite the lack of progress and effectiveness in

the strengthening of controls, not surprisingly, the broad principles on which reform is actually premised are quite simple. First, to impose preemption throughout deterrence structures, measures must be standardised and uniform in application. Second, they must articulate clearly and coherently what is to be regulated and then how compliance is to be achieved. Third, to allow for innovation and technological change they must be adaptable and flexible. Critically, a heightened risk environment should not be the only impetus for change. Ideally, change should develop as a result of the need for strengthened industry sustainability, greater capability stewardship, increased risk acceptability and the widening globalisation of industries – rather than through tragedy or disaster. The capacity to influence real and significant behavioural and developmental change in non-state activities, when the fuse of a major non-state attack may already be lit, reduces the options to the state to simply those involving the determination of standards in crisis and consequence management, rather than the deterrence of any actions.

Longstanding and unrealistic expectations of existing capabilities and regulatory structures have seen the Australian Government largely eschew the need for potentially restrictive anti-terrorist and greatly increased regulatory practices.<sup>2</sup> Recognising this, the adoption of any reforms must seek to educate as much as

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<sup>2</sup> Personal communication with Director Australian Government Analytical Laboratories, 23 April 2001. From a technical perspective, discussions reflect perceptions that regulatory measures are both sufficient and enforceable based on known incidents of misuse and a lack of reporting of this type of activity within an Australian threat environment. The Australian Attorney General's Department, conveyed a similar view (prior to 11 September 2001) and maintains that extant legislation and the existing range of punitive measures within this area are adequate and effective, while acknowledging that if there was an increased risk, there are components within the regulatory structure that would require reform. While there is some validity within these comments on the controls, particularly within the context of the current environment, there is a failure to acknowledge three key issues. Firstly, reporting of proliferation within larger scale programs is nearly impossible to detect and detection is focussed at larger WMD programs and state actors. Secondly, the existing controls are neither targeted at, nor applicable to, the non-state end of the spectrum. Thirdly, the current range of punitive measures are not commensurate with the use of ultra violence, mass casualty activities or the application of measures to deter hoax activity, and similarly, provide no measure of preemption within their structure. Three key reports on the regulatory structure with Australia and commissioned by Department of Health and Aged Care, Environment Australia and the Plastics and Chemical Institute of Australia, noted a clear lack of national uniformity within the Australian regulatory structure, difficulties in enforcement of some of the processes and a lack of industry and government statistical data (not relevant to all sectors). See Environment Australia, *National Profile of Chemicals Management Infrastructure in Australia*, Canberra, November 1998, (accessed 12 January 2001), <http://www.environment.gov.au/cpg/chemicals/profile.html>. R. Galbally, Department of Health and Aged Care, *National Competition Review of Drugs, Poisons and Controls Substances Legislation – Options Paper*, Canberra, February 2000. Plastics and Chemical Institute of Australia, *Regulatory Environment for Chemicals: Trends and Implications for Research*, Melbourne, December 2000, (accessed 6 June 2001), <http://www.pacia.org.au/CSIROandPACIA-SAC.PDF>.

strengthen regulatory processes, ensuring recognition, consensus and ultimately uniformity. Reform must also be realistic in its expectations and implications. The complete reform of all regulatory legislation and trade processes in CBR dual-use materials through draconian enforcement measures would more probably be divisive, nearly impossible to apply, potentially restrictive to specific sectors of trade and in the end would likely prove nothing more than a theoretical exercise given the difficulty in its adoption. These elements, however, change unduly in the way states vary their preferences and propensity towards how they apply risk mitigation measures and the threat environment in which they exist. On this basis, along with the all important determination of costs, the effectiveness of any deterrence process will ultimately be determined. This issue is then further exacerbated when attempting to conclusively demonstrate that the measures are working, as this essentially means proving why something did not occur – clearly an impossible proposition.

Any regulatory process has degrees to which it is imposed and enforced, yet the balance is always between those aspects within the structure that are responsive and those that are aimed at preemption. The premise on which existing regulatory processes are calibrated is that the prospect of mass casualty CBR use is a low probability/high consequence outcome. Consequently, it is then necessary to assess the efficacy of any existing controls prior to moving forward in the development of new measures. In this case, this involves identifying those regulatory structures, processes and controls that can be effectively applied to CBR capabilities or that may have the potential for further development to enhance existing measures. Establishing the efficacy of existing national controls is not enough by itself. As becomes evident in later sections of the thesis, significant and effective regulatory change will only be delivered through major reform, both culturally and throughout the regulatory structures. At the core of the need to impose greater regulatory control of high risk capabilities is a lack of standardisation and synergy between existing processes and assessments of potential non-state capabilities – with current measures operating more in a self-regulated environment than in one based on mandated requirements and enforcement.

The ideal is clearly to be derived from a layered array of mandatory and self-regulatory processes which are applied throughout the CBR capability spectrum with a centrality based on preemption. For widest influence, measures should attempt to maintain a vertical dimension through the regulation of capabilities and micro-proliferation activities within the non-state organisation. Measures must then also attempt to include a horizontal dimension where the mechanism that facilitates micro-proliferation by state or non-state parties is influenced through non-proliferation and counter-proliferation measures. The difficulty is the diversity across the micro-proliferation networks which may range from organised crime structures to cooperative arrangements between non-state actors. While there are a range of counter-measures that can influence micro-proliferation and capability development activities, the more difficult challenge remains in attempts to inhibit vertical proliferation. The difficulty in controlling vertical proliferation is largely attributable to the dual-use nature of the capabilities involved, the need for a range of asynchronous measures and pervasive regulatory structures, which is further complicated through problems in defining the scope of the threat against which regulatory controls are to be targeted.

Australia has acceded to most of the widely established chemical and biological non-proliferation, arms control and anti-terrorist norms. The structure of most of these, however, is based on the regulation of exports, the application of international standards for occupational health and safety, establishing the universality of prohibited actions and attempting to further define normative behaviour. Interestingly, there are still a range of anti-terrorist and counter-terrorist regimes Australia chooses not to participate in, often for valid reasons. For example, the Convention on the Marking of Plastic Explosives for the Purpose of Detection (MARPLEX) and the United Nations Convention on the

Suppression of Terrorist Bombings are two existing regimes Australia is not a signatory to.<sup>3</sup>

As with all regulatory structures, calibrating the effectiveness of international regimes is difficult as they cannot be determined simply on the basis of export denials, import and export volumes or a lack of reporting and activity. The corollary to this is that nearly all regulation is applied quantitatively and generally on the basis of prescriptive or mechanical measures, such as through control lists. These measures draw on defined items, quantities or technologies and are enshrined throughout regimes such as the Chemical Weapons Prohibition Act, Wassenaar Controls and Australia Group Lists. Most international norms are further reduced in influence through the philosophy that underlies their application. That is, most regimes are backward looking and attempt to direct efforts at the regulation of extant or established capabilities, as opposed to looking towards development and innovation, not just necessarily technological, but also structural, operational and social.

Developing a structure of regulatory controls for CBR capabilities is an abstruse and complex exercise fraught with political and trade biases and potentially inaccurate perceptions, all of which collectively inhibit uniformity and consensus. The disjuncture between State, Territory and Commonwealth regulations, paranoiac perceptions of federalism, and concerns by industry of draconian interference by government, have served to create a hostile climate for any regulatory change. This is best highlighted through the relegation of the Commonwealth to an essentially administrative role throughout numerous regulatory structures, such as dangerous goods, poisons and drugs controls and

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<sup>3</sup> As identified in later sections of the thesis, the utility of many of these international agreements is limited, and in many cases ineffective, hence Australia's non-compliance. For example, the criteria for compliance with MARPLEX (referred to as the Montreal Convention – 1991, which covers the requirement to mark with taggants all plastic explosives) at first appears enforceable and of value. The reality, however, is that the taggants (trace elements within the explosives which allow for identification and detection) must remain in the explosives at specific concentrations. The irony is that heating the explosives, such as in an oven or on a radiator, can expunge traces of the taggants. Additionally, the Convention does not account for old explosives or materials other than plastic explosives (which covers a wide range of materials which are predominantly used by many terrorist organisations). Finally, analysis indicates that many of the taggants are below threshold criteria after relatively short periods of storage and volatilise relatively easily. This creates a suspension of toxic particulates and a serious occupation, health and safety hazard, all but rendering the Convention essentially useless and impossible to apply. Personal communication Defence Liaison, Australian Bomb Data Centre, 25 June 2001.

the regulation of health. The States and Territories have increasingly assumed responsibility for many of these controls, yet have also sought to dilute the Commonwealth's measures through the introduction of regional legislation – the consequence being reduced effectiveness, a lack of uniformity and more often a reduced impetus to enforce compliance.<sup>4</sup>

One of the key mechanisms in regulating CBR materials is uniformity throughout the definitional framework in the establishment of standard thresholds, regulatory criteria and agreement on how measures are to be applied. Yet in many cases there remains wide variation in the process of approval and in the application of regulatory requirements, with a range of jurisdictional interpretations in permits, accreditation, licensing, criteria for storage, transport, handling and security. These issues are further complicated through ambiguities and difficulties in defining classes, schedules and categories of agents. The resultant cocktail of regulatory controls results in a lack of enforcement and compliance requirements, and more critically, a reduced national capacity to calibrate the risk. A lack of standardisation and consensus is not unique to the Australian regulatory landscape. Contention over regulatory definitions, volume, weight, ratios, category thresholds, the consumption of chemicals within production processes and the development of new gene manipulation technologies, has also served to reduce the capacity and influence of most international normative practices.<sup>5</sup>

Despite attempts to provide wider utility to international non-proliferation norms, the primacy throughout these macro-regulatory processes has been

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<sup>4</sup> Personal communication with Ms Caroline Tulip, Manager, Dangerous Goods Policy Unit, Department of Transport and Regional Services, 7 May 2001, and also personal communication with Ms Leone Nacua, Department of Health and Aged Care, Therapeutic Goods Administration, Poisons Schedules Section, 4 June 2001.

<sup>5</sup> The problem in defining micro-organisms and toxins is more complex than for chemicals, particularly given the potential of biotechnologies such as genetic manipulation and engineering. It is in fact this issue that has contributed to a reduction in the pervasiveness, application and relevancy of the Biological Weapons Convention. Extensive initiatives over the last five years to further develop and accelerate the Convention's implementation have been frustrated due to difficulties in distinguishing between commercial and military applications of processes along with the enforcement and challenge capacity of the Convention. Personal communication with Australia's two leading arms control authorities - Dr G. Shaw, (Australian National Safeguards Office), 23 April 2001, and Mr R. Mathews, (Defence Science and Technologies Organisation), 26 April 2001.

towards export regulation and those criteria that establish production, stockpiling and development prohibitions, not the regulation of non-state capabilities. Ultimately, micro-proliferation controls will only ever be effectively achieved within a national regulatory framework. For widest effect they would require a pervasive regime of industry and government enforcement and legislative mechanisms, which would need to be both ubiquitous and preemptive in application and intent. While the relevance and the application of seemingly banal micro-controls may appear less than relevant in the context of current transnational terrorist activities, they are as critical. The increasing organisational dependency on illicit drugs, theft, money laundering and illegal proliferation structures by non-state organisations, while increasing the potential for interdiction, also reaffirms the necessity for micro-regulatory reform across the regulatory continuum.

Regulation in essence becomes a process of disruption and permeates all aspects of the capability development strata and non-state organisational dynamic – vertical and horizontal. While the opportunity cost in sustaining more active measures involving physical security can prove potentially unsustainable in the longer term, there remains a range of escalatory regulatory and resource options that can be applied across a range of varying levels for greatest impact. These include for example, the use of passive sentinel structures within existing health and regulatory processes.<sup>6</sup> The corollary to this is that the capture of such pervasive data generates a myriad of new problems. These range from commercial and trade security issues and how information is to be processed, to

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<sup>6</sup> Investigative, forensic and evidentiary processes are entirely reliant on the application of criminal law applied throughout the eight jurisdictions, whether criminal or terrorist in scope. Mr J. Hope, in his seminal review of counter-terrorism capabilities in Australia in 1979, concluded that the judicial organ of the Commonwealth, State and criminal structures was adequate in providing for the interdiction of terrorist activities in Australia. The liability and potential societal injustices derived from the imposition on civil liberties in maintaining strong anti-terrorist measures it was averred were to be at a greater cost than the threat of terrorism. Indeed he further stated that the reaction, or over reaction, sought by terrorists in implementing these measures, suggests some relative success on their part. To distinguish between the effectiveness of criminal and anti-terrorist measures is arguably indistinguishable as one provides the impetus for the other. Hope further examined aspects within the police powers related to the proposition for greater random powers to stop and interrogate people, to stop and search vehicles and to search private property (whether building, land or chattels), without reference to any suspicion of danger in the particular person, vehicle or property. These were the minimum measures considered necessary in order for the Commonwealth to have the capacity to deal with national acts of terrorism. Yet ironically, all were largely dismissed as irrelevant and not applicable within an Australian counter-terrorism environment. Hope, *op. cit.*, Section 3.73, p 49.

who manages and accesses it and how is it to be applied. Despite these complexities, there are already extensive regulatory processes in place that are targeted at public safety and health. In many cases these existing processes already provide the capacity and framework for reporting, monitoring and surveillance protocols (albeit, many of which have had only a limited application or success).

Current CBR regulatory processes are primarily based on denial of identified 'risk' components, materials and agents that might be used in, or contribute to, the development of a WMD program by a state party. This thesis aims to further examine those precepts that might underlie the strengthening of the regulatory capacity of the national controls. However, regulatory lists are only one of many covariances and it is not the intention to examine the viability or relevance of specific lists or agents other than as case studies or examples. More critical is the examination of the regulatory processes that define the utility, acquisition, distribution, control and the potential for the misuse of these capabilities. This is not to aver that the lists or the functionality of the framework in which they are exercised does not need further development – it more often than not does. The intent, however, within the scope of this thesis, is to analyse the capacity and capability of the regulatory structures rather than focus on specific micro-processes and the composition of agents and equipment lists.

There will always be strong exhortations to increase control measures against non-state WMD capabilities, yet very little of the current academic or industry analysis looks beyond the internationalisation of controls, export regulation and the application of barrier and exclusion controls. While the actual benefits of effective export regulation through international norms is incontestable, the measures that are applied have little relevance to non-state activities. A national deterrence framework is in essence the only area where policy, regulation and processing structures can practicably be implemented, targeted and more critically, enforced. Countering proliferation in particular is easily deferred or abrogated by states to international normative practices. The irony, however, is that most CBR activity is a national problem, either through the lack of controls that may have led to any development or in the paucity of measures that allows

states to interdict and prosecute actual use. The smaller thresholds, scale and nature of activity potentially synonymous with micro-proliferation and use, is then less likely to be detected within the discriminatory (and indeed more often non-discriminatory) processes, collection and analytical measures currently established throughout nearly all counter-proliferation and non-proliferation norms – national or international.

While the need for a nationally regulated and comprehensive framework of controls is not a new philosophy, attempting to achieve greater efficiency and effectiveness in the measures applied is normally limited to harsher punitive measures and tighter barrier controls. The specificity of the controls and the context in which they are set is one of the strongest determinants of the preemptive value of any measures. Without clear focus and carefully articulated planning and implementation strategies, particularly in attempting to reflect these priorities within a legislative framework, initiatives develop as feckless, lacking in context or evolving as ad hoc remedies without any real application beyond the last crisis. The law is a blunt instrument and limiting increases in the capability of regulatory measures simply to legislative changes, also fails to consider all the variables. Hence, looking towards purely a legislative solution to mandate or prosecute actions on which regulatory reform is structured, is to circumscribe the real issue. Relying on simply the execution of legislation to effect reform sees the issue as one dimensional, when in fact it is multi-dimensional, with numerous technical and social perspectives.

To attempt to effectively preempt the threat of non-state action when there are limits to resources, societal boundaries and behavioural norms constraining what actions can be taken, involves the management of risk. Yet to further apply a process that actively eschews risk taking and risk aversion, and yet still involves the management of risk, is in fact to apply the broad principles of deterrence. It is this element of deterrence and its core components of reduction, detection, enforcement and response, that will be further explored and applied across a national security structure throughout this section. Prior to attempting to further disaggregate deterrence as a theoretical model and further explore its application within a non-state context, it is necessary examine the spectrum of how it is

currently applied throughout non-proliferation, counter-proliferation and anti-terrorist controls, policies and strategies.

## **DETERRING THE THREAT**

### **Deterrence Theory: Controlling the Risk**

Deterrence as a strategy has only ever been effectively defined and considered within an application of state to state relations. However, increasing frustrations in harmonising non-proliferation, counter-proliferation and anti-terrorist measures, along with the lack of preemption throughout most counter-measures, has generated a greater recognition of the unrealised potential of deterrence theory as a strategy against developing asymmetric threats. A cursory assessment of deterrence theory initially suggests that it is out of context when applied within a non-state environment. This is particularly the case given its association with political statesmanship, the threatened use of nuclear weapons, and the premise on which the theory depends on for validity, that is, the rationality of all parties involved in any conflict.

In its simplest form, 'deterrence theory involves the manipulation of someone's behaviour by threatening them with harm. The behaviour of concern to the deterrer is an attack, hence, deterrence involves the threat to use force in response as a way of prevention to the first use of force by someone else'.<sup>7</sup> The use of force, as well as its limitations, can be manifested in numerous ways, which is at the core of the theory and its various permutations. In essence, deterrence when applied in a non-state context reinforces these principles through firstly making it difficult for the party taking action and secondly, in making the individual and organisation afraid to act through an implicit fear of detection and punishment.

Just as calibrating the success of deterrence theory is difficult, determining when it fails, other than through an attack, is a major limitation. It is this lack of ability

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<sup>7</sup> P. M. Morgan, *Deterrence: A Conceptual Analysis*, Sage Publications, London, 1977, p 9.

to measure any effectiveness in the application of the theory that causes state parties difficulty in its adoption. Most challenging within the scope of deterrence theory, at least in its application to non-state actors, is the requirement to work at the juncture of theory, policy and intelligence. This lack of capacity to gauge the effect of deterrence measures, other than through levels of activity, is at the core of the difficulty in its application by most western democracies. Despite exhortations of the need for preemption in counter-measures, state parties continue to lack well defined, targeted and balanced deterrence counter-measures against non-state activity.

A purist analysis of deterrence theory sees state pitted against state. Morgan, in his seminal publication, 'Deterrence: A Conceptual Analysis', establishes the range of frameworks in the application of the theory.<sup>8</sup> Its main application was within the bipolar structure that followed World War II, where deterrence was ultimately dependent on costs and deterring (or the decision to attack another state party) was premised on the results of unacceptable damage. That is, high potential costs invoke stability and balance between states, however, the complexity of this issue is determined largely by the theoretical approach. There are in essence two divergent approaches, which are the structural (or neorealist) deterrence theorists and the decision-theoretic deterrence theorists.<sup>9</sup> On this basis alone, as a theory it does not appear to be a practice that readily fits into the framework of a sophisticated, civilised society.<sup>10</sup> Most dimensions of deterrence theory focus on it as function of foreign policy, however, as a concept it still has an eidetic relevance in micro-regulatory reform and the deterrence of CBR

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<sup>8</sup> Morgan, op. cit., pp 1-24.

<sup>9</sup> It is not the intent of this thesis to explore the relevance of classical deterrence theory, rather it is to provide a context to its application within a non-state environment. Generally, however, structural deterrence theorists adhere to the concept that the identity in the distribution of power is the most convenient explanatory variable in the causal relationship between system structure and stability. The difficulty with this apparent rigidity in this theory is that it does not adequately account for rogue states or irrational leaders. Decision-theoretic deterrence theorists build on the precepts established by the structuralists to provide an analysis of decision behaviour. That is, they begin with the decision that a war or event is too costly to fight. F. Zagare, 'Classical Deterrence Theory', *International Interactions*, Volume 21 Number 4, United States, 1996, p 368. Also C.C. James, 'Iran and Iraq as Rational Crisis Actors: Dangers and Dynamics of Survivable Nuclear War', in *Preventing the Use of Weapons of Mass Destruction*, ed E. Herring, Frank Cass Publishers, 2000, pp 52-56.

<sup>10</sup> Morgan, op. cit., p 9.

capability development, particularly towards effecting preemption within a national regulatory environment.

Modern history is scattered with examples of deterrence theory and the last decade provides cases of its increasing use within a non-state environment. More recently were the actions by the United States against Usama Bin Laden and the Taliban in Afghanistan in response to the 11 September 2001 terrorist attacks. Another significant incident involved the cruise missile attacks by the United States against Sudan and Afghanistan in relation to their purported sponsorship of terrorist activities. The attack was primarily directed against the transnational terrorist Usama Bin Laden, who it was averred, was responsible for the 1998 East Africa bombings.<sup>11</sup> The use of cruise missile attacks against these states was primarily an act of retaliation or retribution directed against Usama Bin Laden and the organisation Al Qaida. Interestingly, the United States later claimed Anticipatory Self-Defence under international law (which is fundamentally different in its requirements when compared to retaliatory actions by states) as set forth in the *Naulilaa Incident Arbitration* governing lawful reprisals and self-defence under Article 51 of the United Nations Charter (see Appendix One).

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<sup>11</sup> There has been an increasing proliferation of analysis on variations of deterrence theory in recent years, particularly from the United States. Much of the analysis has sought to structure and balance the United States' responses to the threat from non-conventional weapons against conventional military forces and infrastructure targets. It has been born in part from the increasing frustrations in previous responses to terrorist actions and growing public dissatisfaction over the measures available, along with the lack of success in applying them. A common theme throughout the literature and supporting analysis has been the prospect of retaliatory action by United States using nuclear strike capabilities. The 1998 bombings of Sudan and Afghanistan, which resulted in no visible change to Bin Laden's circumstances or the two states' position on terrorist activities, has also been the subject of contention within the analysis. Specifically, the value and triggers for preemptive action against the increasingly ephemeral and ambiguous targets. The results of the United States military action in Afghanistan following the 11 September 2001 terrorist attacks, while appearing as successful in military terms with the Taliban routed, Bin Laden on the run and forces now occupying key areas throughout Afghanistan, may not have been as effective as is widely perceived. The actions will have clearly disrupted the terrorists activities, but in terms of effecting wider and enduring anti-terrorist measures, particularly given the sympathy associated with Bin Laden's anti-western cause throughout other Islamic countries, the military action remains inconclusive in its outcome. This aspect alone ensures that any military success in Afghanistan will likely not be concluded simply from the exercise by the United States in usurping the Taliban regime or the death or capture of Bin Laden. For further analysis on the application of deterrence theory and its application within a non-state and CBR context, see M. J. Powers, *Deterring Terrorism with CBRN Weapons: Developing a Conceptual Framework – Occasional Paper Number Two*, Chemical Biological Arms Control Institute Paper, Washington DC, February 2001.

The United States averred that the attacks against Sudan and Afghanistan in 1998 were necessary to “deter and prevent the repetition of unlawful terrorist attacks on the United States and other countries”.<sup>12</sup> It was claimed VX nerve agent was being produced, possibly for terrorist use, in the facilities that were bombed. These claims were made on the basis of reported covert sampling by the United States which putatively detected a key precursor chemical at a pharmaceutical facility in Sudan.<sup>13</sup> This is a pragmatic example of United States foreign and national security policy and the attempted, yet poorly executed, application of deterrence theory – yet despite the later justification, the outcome still remained largely retaliatory. The salient point is that it is one more example of the ineffectiveness and misapplication of deterrence as a strategy of preemption. The question remains then as to how is it that within this modern and apparently civilised age, the foundation of a country’s national security rests so heavily on the capacity to launch retaliatory action and wreak havoc against another state party?

The interpretation and application of deterrence within a non-state context sees it applied more broadly than with many of the more widely accepted deterrence scenarios that seek to influence state on state relationships. Indeed most analysis of the wider applications of deterrence presents as overly simplistic and pragmatic, placing outcomes in a clearly defined context of cause and effect. Articulating the precepts that underlie deterrence into a framework that applies to a non-state context is complex and dependent on a wide range of interrelationships between many other social, security and regulatory safeguards.

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<sup>12</sup> Letter dated 20 August 1998 from the Permanent Representative of the United States of America to the United Nations Addressed to the President of the Security Council, United Nations Document S/1998/760, as cited in M. P. Scharf, ‘Clear and Present Danger: Enforcing The International Ban on Biological and Chemical Weapons Through Sanctions, Use of Force and Criminalisation’. *Michigan Journal of International Law*, Volume 20, Number 3, 1999, p 493.

<sup>13</sup> There is a wide range of material available on the legitimacy of the analysis and justification for the United States bombing. Opinion now strongly suggests there was little justification in the evidence (if any at all ever actually existed) recovered by the United States in targeting the Al-Shifa facility in Khartoum. Reeve, op. cit., pp 178-210. J. C. Gannon, ‘The United States Intelligence Community and BCW’, ed S. D. Drell, A. D Sofaer, G. D. Wilson, *The New Terror: Facing the Threat of Biological and Chemical Weapons*, Hoover Institution Press, United States, 1999, pp 123-137. For a more recent and controversial view on the later justification of the attacks, particularly the claims that the United States, despite the wide uncertainty in the evidence presented, has subsequently been vindicated, see D. Benjamin and S. Simon, *A Failure of Intelligence?*, The New York Book Review, New York, December 2001, (accessed 11 December 2001), <http://www.nybooks.com/articles/14941>.

In fact deterrence is as much about the psychological relationship and extrinsic and intrinsic influences on a non-state organisation, as it is about increasing response elements and strengthening regulatory measures.<sup>14</sup> Yet without a wider understanding of the interdependence of non-proliferation, counter-proliferation and anti-terrorist controls, the overall efficacy of any counter-measures will always remain incomplete. This is exemplified in the disproportionate emphasis on consequence management as a deterrence strategy. There is no contention that preparedness plays a key role in reducing the capacity to effect an outcome. It is a predominantly reactive response mechanism, however, normally only established following an attack and so remains limited in its overall deterrence value. What deterrence value is derived from any response function is predicated as well on an awareness by the non-state actor of the capability and the assumption of rationality applying throughout the organisation's consideration-action cycle.

The objective of a deterrence strategy should not only be deterring the use of weapons, but should also focus on deterring the non-state actors from acquiring or preparing to use the CBR weapons.<sup>15</sup>

Powers develops a precept based on the causal relationship between what he defines as deterrence opportunities, elements and instruments.<sup>16</sup> Deterrence is determined as much by the utility of response capabilities, as it is the framework of the regulatory measures that control such factors as acquisition, possession, storage, licensing and transport. Rather than focusing deterrence at the culminating act, it should extend throughout all phases of capability development, from acquisition, testing and weaponisation, through to actual use. The essence of the application within this context is then to prevent or reduce the ability of the non-state actor to progress development beyond intent, yet if successful, also influence the development of intent. Intent is subject to a range

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<sup>14</sup> P. M. Morgan, *Deterrence: A Conceptual Analysis*, Sage Publications, London, 1977, p 112.

<sup>15</sup> Powers, op. cit., p 6.

<sup>16</sup> *ibid.*, pp 6-11.

of potential influences and through an understanding of non-state organisational dynamics and psychosocial factors, effectively targeted deterrence strategies should as much seek to influence these characteristics to attempt to cause changes in the basic motivating rationale.

Deterrence requires not only identification, but understanding of the target of deterrence as this rests on influencing decisions made by the target. The concept is based on an understanding of the decision and is grounded in analysis of the non-state organisation's decision making process.<sup>17</sup>

The key vulnerability in the previous applications of deterrence theory is that when employed as a tool of foreign policy, it is biased towards an assumption of a rationality between all the parties involved, assuming all parties in a conflict are aware of the costs and benefits and that they will apply a rational and logical calibration of risk. For example, during the Cold War, deterrence theory was predicated on the prospect of massive retaliatory nuclear strike capabilities so neatly and conveniently encapsulated in the principle of mutually assured destruction (MAD). Applying these same principles to non-state actors requires readjustment in the structure of deterrence theory and moving beyond its Cold War and nuclear antecedents. In its simplest form, an understanding of non-state rationality can only be derived from an appreciation of the world as it appears to the non-state actor. While the assumption of a dependent logic is always potentially dangerous, there is also the case that 'these capabilities may create their own logic'.<sup>18</sup> That is, there is a point of critical risk or a maximum acceptable punishment before a decision maker is deterred. Applying pressure to the cost-benefit analysis or critical risk then more effectively allows the state party to manipulate or influence actions directed against it.<sup>19</sup>

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<sup>17</sup> *ibid.*, p 8.

<sup>18</sup> James, *op. cit.*, p 55.

<sup>19</sup> G.J. Ilardi, 'Deterring Terrorism: Reality or Wishful Thinking?', *Australian Defence Force Journal*, Number 137, July/August, 1999, p 42.

The environment in which the Aum Shinrikyo Cult developed its chemical weapons capability prior to 1995 appears as an interesting example in the study of deterrence measures. Most salient, was the failure by the Japanese (and Australian) government to modify and influence the Cult's intent to develop CB capabilities. In this case, the Cult's cost-benefit analysis in developing and choosing to use CB weapons may not have been measurably influenced by strengthened deterrence measures consisting only of the threat of retaliatory action through prosecution or persecution. There was clearly no sense of fear in the consequences and an already strong predisposition to extremes of risk taking. Given the Cult's appearance of irrational acts, ambiguous justifications and the moral disengagement they applied to any actions, their methods appeared as irrational. They drew heavily on a range of seemingly irrational justifications and legitimisation mechanisms, which most rational people would struggle to find logic in. Despite this, a rationality was applied throughout the group's cost-benefit process, albeit one that given their cultural, social and religious ethnocentricities, was a relatively abstruse concept and hard for those outside of the group's immediate influence to justify.

Despite misperceptions on the intent of the Cult, any actions they took were discriminate and based on an organisational rationality. Their actions were designed to modify their own perception of their enemies' behaviour and of outcomes that did not meet with their approval. Whether this concerned legitimate legislative actions by the authorities, it was irrelevant to the Cult as it perceived itself as the new government in waiting, which in itself justified and legitimised any actions taken. While ultimately there would have been little that might have changed the Cult's ideology or intent, an effectively targeted and well structured deterrence framework may have modified certain patterns of preliminary or escalatory developmental behaviour within the organisation. This may potentially have influenced positive changes in capabilities, employment and operations, and as a result, could possibly have increased the Cult's critical risk earlier in the capability development process, thereby heightening the likelihood of earlier interdiction.

An understanding of the reduction, detection, enforcement and response deterrence mechanisms assists in determining where the non-state capability process is more likely to fail. Critical to this is the premise that 'deterrence rests less on the capacities of people, than on their ability to be conscious of their limitations and adjust their behaviour accordingly'.<sup>20</sup> The value of deterrence depends on the rationality of the non-state actor, individually and organisationally, which is ultimately what determines the efficacy of any deterrence process. Deterrence is as much a state of mind, both for the state and the belligerents, where the objective of any measures is to influence decision makers and decisions against specific courses of action.<sup>21</sup> It allows the introduction of new variables into the non-state decision making cycle with the aim of reducing organisational biases towards risk, ultimately aiming to influence decisions through encouraging a culture of risk aversion within the non-state organisation.

What results is a process of decision and action that eschews large steps for small ones, that favours reversible over irreversible steps, that seeks to minimise risks of serious consequences primarily by taking steps that are expected to have but a limited impact.<sup>22</sup>

In essence, whatever the typology or ideology of the non-state organisation, in most cases a relatively balanced decision making process will prevail. It may not, however, reflect the societal norms generally applied by the majority of reasonable and rational people. This is a relative concept and care must be exercised in the superimposition of stereotypical, ethnocentric biases and norms. Even the non-state organisation is not brought to the point of acting without its own decision making cycle or cost-benefit process being exercised. The organisation, or ultimately a key individual, will be impressed by the risks, the

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<sup>20</sup> Morgan, *op. cit.*, p 9.

<sup>21</sup> A. D. Zimm, 'Deterrence: Basic Theory, Principles and Implications', *Strategic Review*, Volume XXV, Number Two, Washington DC, Spring 1997, p 43.

<sup>22</sup> Morgan, *op. cit.*, p 14.

incalculables, the organisation's own advisers' limitations and the unpredictability of the target's response. 'A rational leader is a self-interested power maximiser'.<sup>23</sup> As such, decision makers and their processes make ideal targets for deterrence strategies to induce all those feelings that discourage a decision from evolving into one of action.<sup>24</sup> Consequently, one of the key components within any deterrence strategy will then be the enforcement mechanisms that underlie the wider regulatory structure. Yet recognising and applying any enforcement processes, at least with any real impact, is the major challenge. The point is not to craft a philosophy that simply applies one level of violence over another through measures simply involving increased punishments, rather it should seek to establish a firm and impartial foundation that defines outcomes as much as it does processes.

Fundamental to the structure of an effective national deterrence strategy is the precept that it will not always succeed and that the concept of deterrence as the universal panacea is unrealistic. Determination and the expectation of how a non-state actor will respond is fundamental to the effectiveness of any deterrence strategy, yet as earlier analysis in this thesis has highlighted, this also remains an uncertain and indeterminant science. The corollary to this is that a deterrence failure is also somewhat of a misnomer, since any actions that are conducted in response to a deterrence failure then become targeted examples which may also have wider utility in deterring future acts of aggression. In addition, every situation has the seeds of even greater disorder contained within, that is, a possession of risk materials could escalate to use, or a low intensity action may escalate to a major regional conflict.<sup>25</sup>

### **Punitive Measures: Perspectives and Deterrence Value**

To the determined non-state actor the deterrence value derived from the threat or use of punitive measures may at times be only minimal. The psychological

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<sup>23</sup> *ibid.*

<sup>24</sup> *ibid.*

<sup>25</sup> Zimm, *op. cit.*, p 47.

benefits and impact on the non-state actor may still be considerably greater than simply the threatened use or application of these measures to enforce compliance. Indeed, it is as much the creation of a heightened security environment and the track record of the state party that is vital in establishing the pretence or otherwise, in the application of punitive or disciplinary measures. Belligerents may often attempt to test the limits of tolerance, pervasiveness and porosity in the structure of the controls, seeking to calibrate whether the state party maintains the preparedness and intent to demonstrate capacity. Simple non-state threats of action may potentially change the dynamics of the risk if the state party lacks the capacity and will to impose retaliatory or punitive action. While the application and threat of punitive action is only one aspect of a wider deterrence stratagem, a failure to apply or enforce measures is the most pernicious aspect of all and is the main cause in vitiating any benefit derived from the deterrence process.

Paradoxically, the use and application of punitive measures suggests an event has already transpired. While the focus, particularly following a crisis is to instinctively seek increases in punitive measures, this also partially diminishes the value of other deterrence processes where emotions and a lack of perspective more often serve to overlook the actual benefits that can be derived from other ubiquitous micro-regulatory reforms and enforcement. It is convenient for governments to join in the exhortations for harsher punishments, but the core of the issue is not to be found in the penalties applied to the culminating act, but in the escalatory events that precipitate the final action.

In his conceptual CBRN deterrence frame work paper, Powers shows the limit of his understanding of deterrence theory by not moving beyond the perspective of punitive measures only being relevant in defining an outcome. He states that 'the object of punitive measures is not to influence the terrorist's ability to obtain a CBR weapon or effectively use it, but to impose high costs in response to attempts to use such weapons'.<sup>26</sup> While Powers is partially correct, the application of balanced punitive measures, as mechanisms through which to

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<sup>26</sup> Powers, op. cit., p 17.

influence behaviour, are critical throughout all aspects in the capability development process, they cannot simply be shaped on the basis of an outcome. In fact the focus of most initiatives to strengthen CBR controls is lacking this balance and based on the mistaken premise that the harsher the application of punitive measures, the more effective the reform and outcomes that will result. While elements of punitive measures must be directed at punishment, given the likely destructive nature of any act, they must also be applied throughout the spectrum to all the variables, minor or major. For example, this includes the need to apply punitive measures against irresponsible or criminal acts involving producers, distributors or vendors and thereby influence behaviour involving the provision of sensitive or dual-use equipment, materials or services.

Punitive measures are in a sense multidimensional and can be applied throughout two levels within the deterrence process. The first is derived from the capacity and environment in which the measures are applied, such as self-regulation or mandatory enforcement. The influence may be applied extrinsically or intrinsically, but ultimately the goal is the same – the minimisation of individual and collective risk through the reduced potential for detection, interdiction and prosecution. Secondly, there are those measures that apply disincentives to producers, distributors, vendors and those that might otherwise be involved as second or third parties. These can be applied through coercion and pressure, or simply through the threat of action that might result in restrictions applied to licensing, access, distribution, trade practices, marketing or revocation of any entitlements and benefits.

Punitive measures, however, always contain the potential for misapplication or misuse. Establishing a balance and perspective is more of a challenge than simply introducing measures. Misuse may be subtle and apply throughout the spectrum from the application of unnecessarily excessive measures, the incorrect classification of information or through trade advantages gained from the misuse

of commercial or personnel information.<sup>27</sup> One of the more interesting examples of the excessive and inappropriate application of punitive measures is drawn from an incident in the United States. Coincidentally, it followed the introduction of the 1998 WMD anti-terrorist legislation which provided the government with extensive powers for the prosecution of belligerents and a seemingly discretionary requirement for the establishment of intent and capability. Ironically, the incident did not involve a WMD capability and there was never any real potential of one being utilised.

The purported CBR incident involved three United States nationals, aged 72, 63 and 44, from Brownsville, Texas. The three males had threatened via email the Internal Revenue Service, the Drug Enforcement Agency and four other federal agencies. The threats involved the threat of use of poisoned cactus thorns that were to be delivered via a crude device similar to a hypodermic syringe (the threats had been specifically directed against members of the United States Federal Government). The device was intended to incorporate a biological toxin or agent such as anthrax or HIV, however, based on the operating system and the reported method of delivery, the device was incapable of functioning as designed or causing multiple casualties. When initial attempts to prosecute two of the three members under WMD legislation failed, they were subsequently convicted on charges of sending threatening emails to the Internal Revenue Service. While there was the potential within the legislation for the men to have received terms

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<sup>27</sup> In the application of their importation risk management strategy for foodstuffs, the quarantine service is able to identify those exporters to Australia who are more efficient in the delivery of goods and provision of a quality product and those exporters who are more likely to be processed more expeditiously. Australian companies and importers make numerous approaches to the Australian Quarantine and Inspection Service seeking information on types and names of firms, distribution points and processes that will facilitate their advantage within the market place. The potential within a regulatory process for misuse or abuse of sensitive information remains a critical factor, particularly when used for commercial advantage. While it is outside of the scope of this research, the collection, storage and analysis of information, along with its distribution, would need to be critically examined in the context of individual, commercial and government privacy laws and fair trading. Personal communication with Mr Steve Bailey, Australian Quarantine and Inspection Service, 24 April 2001.

of up to life imprisonment, two of the perpetrators were sentenced to 24 years jail, with a further five years supervised release following their incarceration.<sup>28</sup>

### **Prescriptive Regulation: Placebo or Effective Taxonomy**

How regulation is applied is just as critical as the structure it is set against in determining its effectiveness. Existing regulatory structures have generally relied on discriminatory and prescriptive criteria determined largely by weight, volume, concentration, purity, licensing, handling, safety thresholds and holding capacities. These types of structures in the processes for regulation form the basis of how regimes such as the Chemical Weapons Convention are enforced. Enforcement of these normative practices is exercised through a range of measures, from the mechanical enforcement of schedules on the basis of eligibility criteria or handling specifications, to the more extreme application of export criteria exercised through norms such as those in the Australia Group controls.

The Australia Group regulatory process provides for one of the more progressive regulatory structures, but it still fails to go far enough and is only applied as an export regulatory process. The process involves exports released on the basis of state clearances and notifications issued to other aligned state parties as denial or acceptance certifications. As with most other regulatory processes, its effectiveness is largely premised on information declared by the exporter.<sup>29</sup> Assessments are predominantly derived from inductive analysis and attempt to establish behavioural, associative, reporting or information patterns which is

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<sup>28</sup> United States District Court Judge Hilda Tagle sentenced J. Wise, 72, and J. Abbott Grebe, 44 to 292 months each in prison in relation to the incident described. They were acquitted of conspiring to use a WMD as well as five other counts of sending threatening messages to President Clinton, the United States Customs, the Federal Bureau of Investigation, the Bureau of Alcohol, Tobacco and Firearms and the Secret Service. O. Emigh, who was also charged, but provided evidence against the other two members, was acquitted of all charges. All were members of the separatist group, the 'Republic of Texas'. The intent and threat behind the device was in order for the group to make their own 'Declaration of War'. See M. Baro, 'Men Sentenced to More Than 24 Years Each in Biological Weapons Case', *Texas News*, Associated Press, 6 February 1999, (accessed 11 January 2001), <http://www.reproternews.com/1999/texas/B180206.html>.

<sup>29</sup> For a detailed list of Australia Group export control lists, membership and the full range of public correspondence on the activities and method for regulation of exports, see Stockholm International Peace Institute Website, (accessed 12 March 2001), <http://projects.sipri.se/cbw/research/AG-mainpage.html>.

consistent throughout most export assessment criteria. The clearance processes, as with a wide proportion of other types of national activity, are largely premised on inducing intent from procurement signatures. This is an indeterminate process, particularly with few end-use or disposal verification requirements. It is made even more complex when nearly all the goods are dual-use and there is a reliance on declared data from the consignee or receiver to provide the initial trigger. Yet it is this type and structure in the regulation of WMD capabilities that state parties have applied the most widely, more often as a convenience rather than for any specific security benefits. The regulatory lists are quantifiable, enforceable and provide for the perception of pro-activeness. The systemic flaw, however, is that without the wider integration of customs, security, police and intelligence capacities, the philosophy that underpins these regulatory processes remains incomplete and tends towards risk taking, rather than risk management.

Regardless of the regulatory system, within some categories or classes of materials there will always remain inherent problems. Most notably is the regulation of biological pathogenic and infectious materials. These materials are difficult to separate into functional categories through factors other than storage and containment classes.<sup>30</sup> Other problems in applying a system involving the correlation of risk to industry standards is that there are still numerous materials, such as some agricultural and industrial chemicals, that fall outside of standard categories, yet still present potential risks due to their overall utility. Similarly, even with the inclusion of an agent, micro-organism or radioisotope in an existing category, it still does not necessarily define its actual potential which is as much a function of the route of entry or method of dissemination, as it is in the physical characteristics of the materials (noting that earlier sections of the

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<sup>30</sup> Biological agents are often categorised as viral, bacterial, fungi and rickettsia, however this is an overly simplistic categorisation of microbial materials due to modifications, manipulation, encapsulation etc. Additionally, due to the interdependency of organisms on their respective hosts or means of transmission, the categorisation of materials by toxicity also becomes unworkable. The most convenient and possibly only workable system is the categorisation of risk based specified criteria such as pathogenicity, infectivity and utility, hence this in part reflects storage and handling classes.

thesis sought to highlight the technical complexity and diversity of factors such as dissemination, environment, toxicity, purity, weaponisation etc).<sup>31</sup>

There is no template or regulatory environment that can be easily applied across the spectrum of CBR capabilities. The most effective regulatory process is one that manages to sweep up those issues of toxicity, physiology, characterisation and utility, which in aggregate defines risk. While risk is already applied throughout many of the regulatory structures, such as those involving the control of dangerous goods, there is a need for the inclusion of a far

wider range of assessment criteria. Any reform process must have a baseline against which risk can be calibrated and, if possible and practicable, this is best achieved, at least initially, within the structure of the existing regulatory framework. For the purposes of this thesis and in order to quantify the thresholds against which risk can be quantitatively defined, Table 12 reflects the proposed minimum baseline categories necessary.<sup>32</sup> It is not proposed that this is

**Table 12 – Proposed National Control List of Designated Risk Chemical, Biological and Radiological Materials**

- Dangerous Goods Class 6.1 – Toxic Chemicals;
- Dangerous Goods Class 6.2 – Infectious Substances;
- Dangerous Goods Class 2.3 – Poisonous Gases;
- Dangerous Goods Class 7 – Radioactive Substances;
- Schedule 6 Poisons – Poisons that must be available to the public but are of a more hazardous or poisonous nature than those classified in Schedule 5;
- Schedule 7 Poisons – Poisons which require special precautions in manufacturing, handling, storage or use, or special individual regulations regarding labelling or availability;
- Radioisotopes with a half life greater than 24 days;
- Biological agents required to be handled in Biological Safety Level (BSL) two, three and four containment facilities.
- All other materials included in the Defence Strategic Goods List 1996.

<sup>31</sup> Regardless of the regulation category, whether on the basis of mammalian toxicity, LCT<sub>50</sub>/LDT<sub>50</sub> or the packaging group, some of the agents within the scheduled lists, such as those contained with the Chemical Weapons Convention schedules, are not included. Additionally, there are numerous trade and colloquial names often attributed to chemicals, along with modifications in structure, synthesis or genetic modification, particularly for many organisms. While the specification of individual materials is necessary, risk categories are best allocated on the basis of the various classes of agent. This is due mainly to the dynamic and general nature of the existing lists (which attempt to capture and regulate on the basis of specifically identified physical characteristics or activity levels).

<sup>32</sup> The most difficult category to establish regulatory criteria for is in the biotechnology sector. In lieu of any currently standardised regulatory criteria, regulation is best applied through the classification of agents against their containment criteria. Categories of Biosafety Level (BSL) facilities are defined in the United States Centre for Disease Control and Prevention, Website, (accessed 1 February 2001), <http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4s3t.htm>

- Level two agents are those that are associated with human disease where hazard equals percutaneous injury, ingestion, mucous membrane exposure. (It would be unlikely regulatory processes could practically extend to the regulation of all BSL 2 agents – a separate risk analysis examining such factors as pathogenicity would be necessary to for each specific class of agent).

a complete, or indeed workable list as it currently stands, however, it does provide the mechanism against which regulatory controls can be calibrated for compatibility, utility and efficacy.<sup>33</sup>

The difficulty, however, remains that while it is awkward to define regulatory criteria for agents, micro-organisms, toxins and radioisotopes, it is significantly more complex when contrasted against the problems in establishing categories for risk equipment and services. There is no defined process within any of the national controls or regulatory structures that effectively regulates the provision of services.<sup>34</sup> While aspects of the provision of services are addressed in Section Five of the thesis, other than categorising these on the basis of dual-use potential, further attempts at disaggregating risk cannot be effectively achieved, or

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- Level three agents are those indigenous or exotic agents with potential for aerosol transmission which may result in serious or lethal consequences.
  - Level four agents are those dangerous or exotic agents which pose a high risk of life threatening disease, aerosol transmitted laboratory infections or related agents with unknown risk of transmission.

Note - These categorisations fail to adequately incorporate new technologies, such as those involving genetic engineering and manipulation, however, as in all cases, they must still be assessed on a separate basis.

<sup>33</sup> The categories and list of CBR materials is not meant to be limited to those defined categories. For example, there still remains poisons within schedule five of the standard that are of suitable utility through their toxicity or physical characteristics (categorisation in this case is on the basis of volume and availability). The lists are structured as an initial standard within the regulatory controls and it would be envisaged that through existing processes established in the industrial chemicals and veterinary and agricultural chemical assessment systems, other materials or capabilities of assessed risk may be added (or deleted).

<sup>34</sup> A Joint Standing Committee on Foreign Affairs, Defence and Trade reviewed export regulatory measures in September 1994, and subsequently released the report, *Report on the Implications of Australian Defence Exports*. Interestingly, the report grappled with the issue of defining the provision of services but was inconclusive in its outcomes, deferring further work until the release of the Defence Publication - *Australian Controls On the Export of Defence and Strategic Goods*. (refers to pp 54-56) The Guide to Exporters, which was subsequently released in November 1996, failed to further address the issue, and as a consequence, there has subsequently been no further work in attempting to define the framework or standards for what constitutes a WMD service, information or technology.

enforced. As such, the indeterminateness in the provision of services and assessment of equipment remains an enduring aspect of residual risk.<sup>35</sup>

### **Defining Capability**

The elements that constitute an effective state WMD capability for research, production, stockpiling, weaponisation and use, are relatively well known.<sup>36</sup> Even so, there still remains uncertainty throughout many aspects in the capability processes associated with a state WMD program due largely to the dependence on dual-use services, equipment and applications throughout many stages in development. Establishing partial development, or even what factors may indicate elements of intent, particularly within a non-state framework, is often ill-defined. For example, while the concept of weaponisation within a state sponsored WMD program involves well defined elements and signatures of research, development, testing and dispersion modelling, there are no similarly established processes or defined critical paths recognised in non-state development. While capability is a critical component in the evidentiary processes to establish intent and development, the challenge is to then identify the actual stage, capacity and any probable outcomes from what are nearly always only very limited or ambiguous signatures.

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<sup>35</sup> Within Australia's enforcement of Australia Group Controls and the Chemical Weapons Convention, there are measures for intervention available in the export of WMD related services to another country, which could be exercised through a veto power via a decision by the Minister for Foreign, Affairs and Trade. Generally these would be expected to involve issues outside of the prescriptive requirements of the Defence Strategic Goods List. There are no openly available records of the application of this Ministerial discretion, at least since the introduction of the Weapons of Mass Destruction Act in 1995. It is unlikely any decision would be exercised against a state party or one of the aligned countries (members of regimes such as the Chemical Weapons Convention and Australia Group). The application of these measures remains a point of contention and the Australian Government's ability to enforce controls, particularly on the basis of services provided, would be predicated on strong evidence of the potential of the service for misuse by the WMD state party – clearly a difficult issue to establish unequivocally, even in the case of the export of dual-use equipment. It is likely that the service would be denied only if it had a clear WMD application and/or was to be used in a declared capacity, in a country of concern. Personal communications with staff of Australian Attorney General's Department, 24 April 2001 and Strategic Technology, Policy and Operations, Department of Defence staff, 11 January 2001.

<sup>36</sup> This is not to imply that the detection of a state sponsored WMD programs is a clearly established process. While detection of nuclear capabilities can be deduced from such factors as waste and contamination analysis, along with the acquisition of specific to task equipment and materials, chemical and biological programs are relatively more difficult to detect due to the diffusion of legitimate processes, materials and equipment throughout industry and government. This is particularly exacerbated if the state maintains indigenous production and processing capabilities, making detection and identification of specific processes, particularly those related to research, development and weaponisation, extremely difficult to assess and detect.

The difficulty in defining the evidentiary process is in establishing with a high level of certainty that it not only involves possession of CBR related materials, equipment or services, but includes aspects of intent. While one of the easier signatures to discern throughout the capability development process is that of weaponisation, rarely would activity be that easily distinguished. The complexity is that in numerous situations, agents or micro-organisms may simply be released as neat agent or as an infected host or vector. For example, the Aum Shinrikyo Cult released sarin as a neat agent in the 1995 Tokyo subway attack. The likely obstacle in establishing suitable evidentiary criteria is in the wide usage of commercial equipment, dual-use materials and publicly available information. The prospect for establishing unambiguous escalatory development signatures or in unequivocally defining capacity, while clearly shaped by aspects of intent, is in the end dependent on an extensive range of factors and variables.

Establishing intent is also equally dependent on a complex myriad of variables. This proves increasingly more difficult as capability moves down the spectrum towards the use of toxic industrial chemicals and radioisotopes. In most of these instances, activities are more often simply limited to threatened use, possession or a situation where the claimed capability is not commensurate with the threatened capacity of the materials. The historical record reflects a predominance of this type of activity. Table 13 is a list of indicators provided by the Defence Strategic Trade and Policy Organisation that were adopted from a guide provided to exporters. Its aims to identify to exporters those signatures throughout the commercial sector that may potentially be associated with illegal, covert or the misuse of materials. It is an example of both the complexity and of the detail involved in the end-use and disposal verification processes.<sup>37</sup>

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<sup>37</sup> Defence Strategic Goods List, *op. cit.*, p 29. This has been adapted for the thesis from sections of the Strategic Goods list to provide a better context and application to regulate the micro-proliferation of CBR capabilities or its associated development by non-state belligerents.

**Table 13 – Indicators of Illegal, Covert or Misuse of CBR Materials**

- Multiple acquisition, procurement or delivery points
- Second and third party dealings
- Inconsistencies and/or anonymity via circuitous procurement routes for example, multiple/discreet purchases via the Internet;
- Non-declarable volume, weight, ratio thresholds;
- A customer's willingness to pay cash for the high value orders or offers of unusual or extremely lucrative financial compensation for the product;
- Reluctance on the part of the purchaser to provide end use or end user information or where information provided is incompatible with the usual purpose for which the product is designed;
- Instructions to make direct shipments to trading companies, freight forwarders or export companies which have no apparent connection with the purchase;
- Packaging requirements inconsistent with the shipping mode and/or destination;
- Products or options ordered that appear to be incompatible with the customer's environment or line of business;
- Circuitous or commercially illogical routing;
- Customer's unfamiliarity with the product or its application support equipment or performance; and
- The customer's order is for parts known to be inappropriate or for which the customer appears to have no legitimate need.

Given the ambiguous and dynamic nature of micro-proliferation activity, defining indicators beyond simplified typologies would more probably only indicate trading inconsistencies and obfuscate the detection of high risk proliferant activity. These difficulties are then increased exponentially when information platforms such as the Internet are used to facilitate export and import activities, often involving freight forwarding or activity between multiple parties

in resources and industrial trading structures established outside of the country the materials are purchased from, or imported to.<sup>38</sup>

Critically, there are increasing proliferation concerns associated with the alarmingly fast growth in the Internet for the trading of chemicals and biotechnology commodities electronically. This type of remote trading activity has the potential to significantly reduce any of the more well established signatures that are often associated with acquisition and development. While the chemical and biological international conventions in theory apply to Australian nationals, whatever the nature of the activity, control is premised on a wide range of factors and excludes a variety of conditions and trading environments, particularly when the activity may only in part contribute to, or it was facilitated unknowingly, by an Australia party. This is further complicated when the trade

<sup>38</sup> While the prospect of the Internet should in theory have no marked influence on compliance by industry with product stewardship or non-proliferation measures, there is no doubt that it has the potential to change the face of how business is conducted and further distance distribution, production and sale processes. As one chemical industry manager stated, 'by putting your products out there on the Web, you are making them accessible to people with whom you may not have done business with before'. The major concern is that sale of a product via independent exchanges can make suppliers more vulnerable to impersonal encounters with buyers.' G. Rao, Manager Rohm and Haas, as cited in E. D'Amico, 'On-line and Off: Product Stewardship Rules Apply – Do You Know Your Customers?', *Chemical Weekly*, 12 July 2000, p 68.

occurs electronically, such as through the Internet and it is outside the jurisdiction of where it originated from or it takes place remotely between non-aligned/non-signatory parties.

The increasing potential of this widely available form of 'soft proliferation' provides significant opportunity for the discrete and non-attributable movement of controlled, sensitive or dual-use materials and equipment. This highlights that the proliferation of these capabilities, and hence the requirement for regulation, must extend throughout both the strategic and the domestic trading sectors. Regulatory requirements cannot be constrained simply within a two dimensional environment. To effect any measure of control in the proliferation of CBR capabilities, national and international regulatory environments must be harmonised and not limited by measures that apply either inside or outside of national boundaries.<sup>39</sup>

## **INTERNATIONAL AND NATIONAL REGULATORY NORMS**

### **An Australian Regulatory Model**

The broad regulatory structure within Australia is set within a labyrinth of bureaucracy, standards and government and industry mandated and self-regulated processes. While public safety is included as a major consideration within the regulatory structure as a function of production, distribution, sale or disposal, most security requirements are generally articulated through the form of tamper proof seals for children, denial of public access, specialised handling

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<sup>39</sup> The potential of the Internet in particular to move controlled goods from, to or within a country is an increasing area of concern for agencies involved in the export regulation of controlled goods. The potential to operate outside of regulatory controls, directly and indirectly, with few signatures of association, or the prospect of detection, is highly likely. While legislation such as the Chemical Weapons Prohibition Act (1994) Act does provide for a wide range of measures, with penalties of up to life imprisonment, for 'transferring, directly or indirectly, chemical weapons to another person' or 'assisting the development, production or otherwise acquisition, stockpiling or retention of chemical weapons', it is only relevant to certain classes of chemical warfare agents, does not apply to biological materials or radioisotopes and only applies under certain conditions or activities. Chemical Weapons (Prohibition) Act 1994, Part 2, Section 12, (a) and (b). Personal communication with Dr Margaret Matthews from the Plastics and Chemical Institute of Australia, 9 May 2001. Discussions with industry bodies have also highlighted this as a concern in relation to issues of quality, compliance with industry stewardship programs, public safety and transparency. Regulation of the Internet as a distribution vehicle for resources and commodities is still at an inchoate stage of capacity, capability and analysis, yet not surprisingly it is still allowed by governments to operate in a completely unregulated environment.

criteria, labelling, waste management and transport.<sup>40</sup> Given the ephemeral and discrete nature of non-state micro-proliferation, the capability of the national regulatory environment to provide any triggers of activity or analysis of patterns based on information collected, collated, processed and analysed, is extremely limited (other than for some export, import and notifiable diseases). Other than through declared information, the laws of probability or a significant occurrence which generally heightens awareness, there remains limited to negligible capacity when information on CBR related activity as a standard process is likely to be reported, detected or responded to.

In the main, current legislative requirements remain constrained to restrictions on the abuse of substances, such as morphine, pethidine and dexamphetamine, or through limitations on access to prevent the misuse of illicit drugs, such as pseudoephedrine, rather than security directed at regulating the potential for escalatory development of CBR capabilities.<sup>41</sup> Most significantly, and at the crux of the weakening constraints on the wider diffusion of CBR capabilities, are the major changes in the structure of regulation over the last decade, particularly for chemical and biological agents. Regulatory structures are now developed more as enabling statutes, assigning general obligations, duties and rights. This philosophy, however, is in most cases at a radical disjuncture with the requirement for greater security and the use of wider and mandatory reporting and surveillance regimes.

In terms of the general standards that establish how regulation is to be applied nationally, it can broadly be divided into three areas. These cover quarantine and inspection, barrier and exclusion, and protection controls. While this simplifies what can be a very complex process, it serves to highlight the spectrum and function across which activities are regulated and applied. Australia's trade and

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<sup>40</sup> Galbally, *op. cit.*, p IX.

research activity, along with strong agricultural and rural industries, are the major catalysts that establish and define the structure and requirements for most regulation. It is in fact these industries that largely determine the standards for nearly all quarantine and exclusion measures. Critically, the area involving protection controls that generally applies to most domestic regulatory requirements, is one of those unrealised areas that maintains significant potential to effect changes in the control of CBR capabilities, yet it still remains a largely vacuous and unregulated environment. In essence, the problems with most existing regulatory controls can be summed up in three key points: existing laws focus predominantly on borders, controls are in the main directed at 'after the fact' identification and existing regulatory measures are not orientated towards uniformity, a national agenda or as preemptive strategies.

Efficiency within the reform process is more likely to be found throughout those existing regulatory structures that provide the potential for enhancement or a model against which CBR risk capabilities can be superimposed. Using existing structures where possible potentially reduces costs and the impact of change. For example, regulatory processes such as those within waste management legislation have the potential to play a key role in the greater harmonisation of extant controls and increased regulation of CBR risk materials. While waste management is primarily concerned with control and accountability of outputs, changes to the existing waste regulatory model could potentially also incorporate many of the same considerations for inputs. As a consequence, this could result in significant increases in the regulation of all facets of production, distribution and disposal – a concept more commonly referred to as a 'cradle to grave'

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<sup>41</sup> The Commonwealth Poisons and Drugs schedules 8 and 9, which largely covers these classes of materials, is generally concerned with the control of substances of abuse, sports drugs, banned materials or precursors used for the production of these substances. There are also materials, such as some high activity isotopes and highly pathogenic agents, for which control measures are also rigidly enforced. However, in many circumstances these materials are either not dual-use, have no application as risk CBR materials (in terms of the potential for use by non-state actors) or are controlled under different regimes or measures (for example, the regulation of enriched uranium or plutonium which is controlled through the international/national reporting requirements enforced through the Nuclear Non-proliferation Treaty).

process.<sup>42</sup> While considerable amendment and restructuring would be required to achieve this as a practicable outcome, it has the potential to provide organisations with a strengthened combination of mandated and self-regulatory controls, along with greater accountability and management of materials consumed or produced during handling, production, consumption or in disposal.

The national regulation and management of CBR materials is based primarily on occupational exposure standards, environmental controls and health surveillance requirements. Most regulatory measures focus on controlling materials at a particular stage in the production or distribution cycle, or within an application.<sup>43</sup> There are more specific reporting and monitoring processes, however, these are generally directed at environmental exposure and include such aspects as worker safety, transport, public health, environment protection and the handling of hazardous substances (including their disposal as waste). The most porous regulatory structures throughout all the classes of materials are those applying to biological agents and toxins. While there are protestations from the national biotechnology industry and research sectors that there already exists strong regulatory processes, these refer to criteria established predominantly for testing, use, modelling and evaluation prior to release in the public or commercial

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<sup>42</sup> There remains only limited uniform national legislation on disposal of waste products. Nearly all waste disposal (with the exception of certain classes of chemicals and radioisotopes) is regulated within the States and Territories jurisdictions. One of the more tightly controlled systems is the Victorian model coordinated by the Victorian Environment Protection Authority, which is administered through the TRANSCERT database. Information is collected under Victoria's Environment Protection (Transport) Regulations 1987. The waste is tracked via this information collection following products from 'cradle to grave'. The process involves a system of certifications at each stage of the waste movement, from producer through to final disposal. While the 'cradle to grave' model provides for a wide range of regulatory opportunities, as the measures currently stand, they remain primarily focussed at environmental issues, however, these are directed at contamination and exposure standards rather than issues of security. Environment Australia, *op. cit.*, p 13.

<sup>43</sup> There are four key schemes for the regulation of chemicals within Australia which are based on their more common application: agriculture, industry, pharmaceuticals and food. The two areas of greatest potential, at least in terms of risk agents, are those within the agricultural and industry sectors. Pharmaceuticals and food more often provide for the delivery means rather than the actual risk agent as an active constituent within the processed product. Biological materials and toxins are broadly regulated within one single general category based on dangerous goods codes (there are other requirements based on standards and containment that establish various aspects of handling and access). Radioisotopes are regulated on the basis of activity levels and types of isotope. The regulation of isotopes by activity levels is primarily based on containment, handling, transport, storage and exposure standards which are established by the International Atomic Energy Agency. Details of specific schemes, their relevance and potential applications are analysed in Appendices One and Two to Section Four of the thesis.

domains.<sup>44</sup> Regulation beyond the point of sale, particularly within the State and Territory jurisdictions, still remain predominantly unregulated and uncontrolled.<sup>45</sup>

Regulatory controls are theoretically applied throughout all sectors equitably where the higher the risk the material, the more tightly regulated it is meant to be. The risk, however, is dramatically increased where there is a convergence of factors and an environment then becomes more vulnerable to exploitation. As an example, a situation where research is being undertaken into high risk materials and there also exists a porous or loosely controlled environment which may facilitate relatively easy access to high risk seed stocks, toxins, precursors, agents or isotopes. An enduring area of contention, particularly with the handling, storage and security of biological and chemical agents, are the lack of controls throughout the academic sector.<sup>46</sup> This particularly concerns the access and

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<sup>44</sup> Biotechnology Australia, *Australian Biotechnology Report 1999*, Ernst and Young Consultants, Canberra, (accessed 2 February 2001), [http://www.biotechnology.gov.au/industry%5research/reports/biotech\\_report.pdf](http://www.biotechnology.gov.au/industry%5research/reports/biotech_report.pdf).

<sup>45</sup> *ibid.* The report was commissioned by Biotechnology Australia and was carried out by Ernst and Young Consultants. The report was considered the first benchmark in the analysis of the Australian biotechnology industry and public sector activity. It is utilised by the Australian Bureau of Statistics as the only baseline reference for the biotechnology sector. Personal correspondence with Mr D. Byars at the Australian Bureau of Statistics, 7 June 2001.

<sup>46</sup> Following the deaths resulting from anthrax contamination via mail in the United States, there have been wide ranging concerns regarding the porosity of laboratories and culture collection facilities, both domestically and globally. Concerns in the United States shifted early in the investigation process towards the domestic availability of strains of anthrax, specifically, the access, porosity and accessibility of these materials throughout research and academic laboratories. Estimates across the United States suggest there are upwards of 250 laboratories that are registered to handle anthrax, but this figure would be expected to be significantly larger as it does not include certain types of research functions and processes and is only based on declared data. In response to increasing concerns, the United States Association of Public Health Laboratories approached Congress to consider new safety and security measures for tracking, communication and staffing networks to be established. 'Anthrax: United States Military May Have Ties to Incidents', Global Security Newswire, 10 December 2001, (accessed 11 December 2001), [http://www.nti.org/d\\_newswire/issues/newswires/2001\\_12\\_10.html#12](http://www.nti.org/d_newswire/issues/newswires/2001_12_10.html#12). Also see E. D. Harris, Research Fellow Centre for International and Security Studies at Maryland University, Representation before House International Relations Committee, 5 December 2001, (accessed 11 December 2001), [http://www.house.gov/international\\_relations\\_harr1205.htm](http://www.house.gov/international_relations_harr1205.htm).

availability of often extremely dangerous materials in university laboratories and their associated research facilities.<sup>47</sup>

In the process of accreditation, licensing and through the issuing of permits to handle classes or codes of hazardous materials, all national facilities are required to comply with Australian and New Zealand Standards, whatever the containment, standard or function of the service. The Standards apply to processes such as chemical and biological laboratory construction, handling, storage and aspects of use.<sup>48</sup> Compliance is not mandatory, however, (although licensing and the issuing of permits implies agreement and is required if accreditation for the facility/individual is sought) and it remains a predominantly discretionary process. Individual controls beyond those standard operating procedures established within each facility or laboratory rarely extends to the tight security of materials and access (at least in terms of securing the materials against misuse as opposed to inadvertent exposure). As an example, a poisons permit within most state and territory jurisdictions would normally be granted to an accredited individual against a nominated facility. The accredited individual then provides limited access and distributes the materials and equipment, yet there is little requirement for accountability and distribution is a largely discretionary function.<sup>49</sup>

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<sup>47</sup> The comment regarding concerns within academic and/or research facilities reflects findings from a study commissioned by the Commonwealth Scientific, Industrial and Research Organisation, and the Plastics and Chemical Institute of Australia, on behalf of the Chemical Sector Advisory Committee. The review, titled *Regulatory Environment for Chemicals: Trends and Implications for Research*, identifies a range of experiences within the review group that many of these types of academic research organisations 'provide less emphasis to health, safety and the environment than within manufacturing organisations involved with similar materials or process', Melbourne, 1998, p 4, (accessed 4 March 2001). <http://www.pacia.org.au/CSIROandPACIA-SAC.pdf>. Personal communications with Dr M. Mathews from the Plastics and Chemical Institute of Australia, 9 May 2001. Both references reaffirmed the findings of review and provided other anecdotal evidence of similar activities and breaches of compliance throughout academic and research facilities.

<sup>48</sup> The relevant Australian and New Zealand Standards are as follows:

- AS/NZS 2243.1 Safety in Laboratories: General, 1997.
- AS/NZS 2243.10 Safety in Laboratories: Storage of Chemicals, 1993.
- AS/NZS 2243.2 Safety in Laboratories: Chemical Aspects, 1997.
- AS/NZS 2243.3 Safety in Laboratories: Microbiology, 1995.

<sup>49</sup> Personal communication with Dr J. Kelly, Laboratory Manager (designated permit holder for facility), Western Australia University, 1997-1998, 15 February 2001.

In order to move forward in the analysis and assessment of measures necessary for an improved regulatory environment, it is first necessary to understand the potential in the risk, specifically any vulnerabilities, throughout the existing controls and the context in which they are set. Appendix One is an analysis of the relevant international legislation, regimes and conventions that apply to the regulation of WMD and CBR capabilities. Similarly, Appendix Two is an analysis of the Australian legislative and regulatory environment relevant to the control of micro-proliferation and use of CBR and WMD capabilities. The analysis focuses primarily on the Commonwealth, State and Territory controls which are directly and indirectly relevant to the regulation of CBR materials. Most importantly, Appendix Two also examines the applicability of international controls within a national environment. The Appendices do not seek to analyse the validity of the controls in the context of state WMD sponsored programs, and while there are areas of mutual benefit, the primacy in the analysis remains towards the relevance of these measures against micro-proliferation and use by non-state actors.

### **Export Regulatory Processes: An Australian Model**

Australia's system of export controls on defence and dual-use goods and technologies with military applications is designed to ensure that such exports are consistent with broader Australian foreign, strategic and security policy objectives. The system is an essential element of our non-proliferation policy, implementing our commitment to controlling the proliferation of weapons, and to our claims to be a responsible defence exporter. Australia is recognised as an important contributor to international efforts to control the proliferation of weapons of mass destruction and our export control system is a vital element in our efforts to advance regional and global security. While applications for the export of controlled items may occasionally be

denied, the primary purpose of our export controls is not to prohibit exports but rather to facilitate scrutiny by the Government of all applications to ensure their export is consistent with Australia's broad interests. Australia's export controls have been designed so that they do not hinder unnecessarily the export efforts of Australian industry.<sup>50</sup>

The export of most CBR capabilities, which covers materials and equipment, is encapsulated within the Defence Strategic Goods List – November 1996, which is administered by the Strategic, Trade, Policy and Operations Section on behalf of the Department of Defence. The control of the goods, however, is enforced by Customs through provisions in Regulation 13E of the Customs Act (1901) – (Prohibited Exports).<sup>51</sup> Interestingly, Defence is advertised as the 'one-stop shop' for export regulation and licensing for all processes involving strategic, defence and dual-use goods.<sup>52</sup> The controls cover a wide range of chemical, biological, nuclear and defence-related goods and technologies, with both civil and military applications.<sup>53</sup> This apparent 'defensification' of what should be a much wider industry and government involvement and 'ownership' of the assessment processes, also has a significant potential to be counter-productive. It is more likely to inhibit the method of regulatory control, it reduces industry participation and divorces large sectors of government from their obligations and intimacy with the application and enforcement of the CBR regulatory processes

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<sup>50</sup> International Materiel Branch, Industry and Contracting Division of Australian Department of Defence -- *Australian Controls on the Export of Defence and Strategic Goods*, November 1996, p 2.

<sup>51</sup> 'Defence and related goods' defines those goods controlled under Schedule 13 of the Customs (Prohibited Exports) Regulations. 'Defence-relevant goods' is a wider definition which refers to those goods of direct or indirect military relevance. It includes many of the dual-use goods controlled under Regulations 13E, 13D, 13F and 13G. Australian National Audit Office on *Defence Export Facilitation and Controls - Audit Report Number 26 1995/1996*, p vi.

<sup>52</sup> The driving force behind Defence assuming carriage of responsibility for the approval, licensing and permit process were the findings of the Joint Standing Committee on Foreign Affairs, Defence and Trade, op. cit., and Australian National Audit Office, op. cit.

<sup>53</sup> The Defence Strategic Goods List regulatory process also covers goods being exported after, or for repair, and the temporary export of items for demonstration or loan purposes. The list includes equipment, assemblies and components, associated test, inspection and production equipment, materials, software and technology. Part 3, Category 1 on materials, chemicals, micro-organisms and toxins mainly covers chemical and biological capabilities while radioisotopes permeates category 1, however it is generally only applicable to the use within, or for, defence goods, as opposed to a comprehensive listing on the basis of half life or activity level.

(which includes the perception that the regulation of dual-use goods is only an export process).<sup>54</sup>

Approximately eighty percent of the goods within the Defence Strategic Goods List that Defence is required to administer, have negligible to limited relevance as defence-related goods. Defence, however, is given responsibility for clearances, often without the appropriate expertise needed to assess the potential of these goods, and has only a minor legislative and investigative mandate through which to fulfill its obligations. It is not contended that Defence needs to be involved in many of the clearance and administration processes. Defence's wider role, however, in the regulation of those goods that are not defence-related, specifically the processes involving the vetting, investigation, clearance and prosecution of breaches, is potentially counter-productive given the core combat role of Defence services and agencies. Possibly too conveniently, this does relieve other organisations of their own oversight and investigative responsibilities in regulating and controlling the illegal or covert use of dual-use and defence goods.<sup>55</sup>

Specific controls on the export of goods within the Defence Strategic Goods List relies on two main discriminatory processes: end use/user based processing and technology/potential assessment. In theory, for each export that fits the criteria, an assessment is required to examine the WMD dual-use potential and the likelihood for misuse based on considerations of quantity, procurement/shipment method, transshipment, end-use and established prior or future associations. Two of the more significant limitations within the processing systems are that

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<sup>54</sup> The term 'defensification' was aptly used by G. Oehler and used in the context of increasing concerns over the militarisation of the issue of CBR capabilities. The term in particular applies to collection assets and the subsequent frustrations in the primacy for their use being allocated to tactical commanders in the military, as opposed to the dissemination of sensitive material to security, police and others that are in positions which use and rely on this intelligence and information to manage their responses. For further information see G.C. Oehler, 'Warning and Detection', *The New Terror: Facing the Threat of Biological and Chemical Weapons*, eds S. D. Drell, A. D. Sofaer, G. D. Wilson Hoover Institution Press, Stanford, 1999, p 148.

<sup>55</sup> The responsibility for administering WMD exports was devolved to Defence through the findings and recommendations of the Joint Standing Committee on Foreign Affairs, Defence and Trade, op. cit. While it is not within the scope of this thesis to identify or examine the validity of specific departmental responsibilities, the use of Defence, other than in the processing and assessment of defence goods, in what is a clearly non-Defence role, is potentially divisive, inefficient and inappropriate, particularly given its primary combat and service responsibilities.

the criteria are based on the threshold requirements for a WMD state program. As a consequence, the process, despite the appearance of specificity, fails to have the necessary discriminatory mechanisms required to control non-state capability development. This is also highlighted in the significantly reduced quantities of materials and equipment required for non-state development when compared to a state WMD program. Secondly, the assessment is based on the veracity of the information provided by the exporter.<sup>56</sup> While there are validation processes within the assessment structure, constraints imposed through resource and staff limitations, a lack of technical proficiency and the enduring issue of the dual-use nature of WMD development activity, suggests a wide porosity in the vetting system and more critically, a propensity towards risk taking. As critically, it is also unlikely any of the clearance processes could be adequately enforced given the requirement to establish that the trade actually involves WMD activities and has the potential for it to be utilised by a country of concern (see Appendix Two for further analysis of the evidentiary criteria within the WMD Non-Proliferation Act).<sup>57</sup>

Given the discrete nature of micro-proliferation and with few existing national discriminatory regulatory processes in place, other than those directed at the control of illicit drugs, the collection of duties or measures aimed at reducing people smuggling activities, there is little prospect of detection unless the materials or services being moved illegally or covertly are declared. In the current national regulatory environment, given the volume and highly specialised nature of the search and clearance processes required to recognise dual-use or sensitive goods (other than the obvious declaration on an import or export manifest), interdiction is more likely to be based on nothing more than the laws of probability.<sup>58</sup> While barrier and exclusion controls are enforced

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<sup>56</sup> This is a systemic flaw in the clearance processes, however, this is partially dictated by a lack of resources and as a result of the difficulties in verifying information gained from open or international sources. As most proliferation activity occurs illegally, covertly or is disguised as legitimate business activity, detection and interdiction is increasingly more complex given the lack of knowledge of established proliferation routes. Secretary of Defence, *Proliferation: Threat and Response*, pp 2-28.

<sup>57</sup> The terminology 'country of concern' denotes a country that has been assessed as a risk due to its suspected involvement with specific aspects of a WMD capability. Countries assessed as such by the United States are defined within Office of the Secretary of Defence, *Proliferation: Threat and Response*, pp 2-60.

<sup>58</sup> Personal communication with Australian Customs Director Exports, 1 September 2000.

through the Australian Customs Service, the capacity to track, monitor and detect consignments that contain sensitive, dual-use or prohibited WMD goods, as a routine operation (as opposed to high priority areas, activities under investigation or as tagged consignments), does not exist.<sup>59</sup> Yet, it is in this area where most of the micro-proliferation activity and traffic is more likely to be occurring.

Despite the limitations, the only regulatory structure which incorporates elements of data verification, information processing and transfer protocols for dual-use goods is within the export regulation process. An electronic clearance and reporting system for all exports attempts to link the Australian Customs Service with all freight forwarders, depot operators, consolidators, airline and shipping companies, export permit issuing authorities and the Australian Bureau of Statistics. It is under this system that any Defence Strategic Goods List items quote a permit or license number to obtain the clearance to move materials.<sup>60</sup> There remains, however, no control mechanism or the existing resources to ensure that goods are not moved through third parties or via intermediate destinations. Additionally, the impetus for the Australian Customs Service to initiate action is more often based on the data drawn from their own system – which assumes correct and accurate data entry, single destination movement of the goods and the legitimacy of the end-user. The process is further unenforceable when it concerns the regulation of services. There remains no national regulatory system that captures reporting nor data in the provision of specialist or dual-use services, as an export, import or nationally. More critically, the indicators for all CBR capabilities are derived from single source identifiers rather than assessments of risk. That is, analysis is primarily based on the matching of CBR equipment or materials from prescribed lists, such as those incorporated in the Defence Strategic Goods List, rather than in aggregate where considerations of potential and utility may be incorporated.

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<sup>59</sup> *ibid.*, and Defence Strategic Goods List, *op. cit.*, p 27.

<sup>60</sup> *ibid.*, p 28.

The Defence Strategic Goods List requires a range of permits and licenses as the general method of regulation. In most cases where goods exceed defined thresholds or are to be moved to specific destinations, the exporter may be required to supply an end-use and non-transfer certification for the goods. These processes, however, are relatively easily circumvented as there remain few verification checks on the veracity of the data provided, with more often no disposal or end-use certification required for the majority of materials. Interestingly, the Minister for Defence (or appointed delegate) maintains the power of veto for the export of all controlled goods.<sup>61</sup> The circumstances in which this executive power might be exercised would be unique, requiring a clearly established association with a WMD or CBR related activity. Hence, the use of these measures given the further requirement to establish an application or context against a non-state activity, would make their use appear even more improbable.<sup>62</sup> These factors, when combined with porous barrier controls and only limited visibility of a narrow sector of the trade (which falls within the requirements of the Defence Strategic Goods List), indicates a heightened propensity for exploitation as a result of these systemic vulnerabilities – ultimately equating to an increased, yet enduring, level of residual risk.<sup>63</sup>

Despite the appearance of specificity in its structure, the enforcement of criteria within the Defence Strategic Goods List is mainly directed at corporations through the imposition of pecuniary penalties. Prosecution would normally be through the Customs Act 1901 and Regulation 13E, or dependent on the veracity of the information provided, via the Crimes Act 1914. The punitive measures available range from penalties of three times the value of the goods or fines of A\$60,000 for corporations, with a maximum of two years jail.<sup>64</sup> There are also

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<sup>61</sup> Interestingly, there is no retrospectivity within the Minister's power, at least applying to Customs prohibitions. While it is stated that any decision is not 'appealable' through the Administrative Appeals Tribunal, it has yet to be legally validated and it is likely that in decisions which draw exclusively on the potential of the dual-use nature, or utility of an item of equipment or material, that the Commonwealth's position would be denied if challenged. Personal communication with staff of Australian Attorney General's Department dated December 1998.

<sup>62</sup> Defence Strategic Goods List, *op. cit.*, Section 4.4, p13.

<sup>63</sup> Verification could occur for CB controlled goods which may consist of a post-shipment inspection by the exporter or the Commonwealth, however, there remains no provision for verification of actual use or subsequent disposal. Defence Strategic Goods List, *op. cit.*, Section 4.3.2.3 sub-paragraph (c), p 13.

<sup>64</sup> Defence Strategic Goods List, *op. cit.*, Section 8.1, p 30.

measures available in Commonwealth legislation, specifically within the Weapons of Mass Destruction Act, that also apply punitive measures through enforcement of the Crimes Act or Customs regulations, with similar penalties. Throughout the legislation, however, there has yet to be any recorded prosecutions of an individual or company involved in the export of WMD dual-use goods, state or non-state related. This may just as easily reflect a lack of collection or veracity in the end-use verification of goods rather than an outstanding track record – yet either way the data remains inconclusive. The difficulty is firstly in the capacity to calibrate the effectiveness of existing measures and secondly, given the potentially indeterminate nature of any covert proliferation, in then assessing the potential risks within the processes.

Despite the prescriptive nature of export regulation, there remain numerous inconsistencies in the processes between the regulation of state and non-state CBR capabilities. For example, a schedule two chemical is only controlled as an export if it constitutes more than a 10 percent of a mixture on a 'solvent free basis'. Additionally, agents such as triethanolamine, sodium cyanide, potassium cyanide, when contained in consumer goods in quantities not exceeding six litres, do not require regulation or export control.<sup>65</sup> Paradoxically, the export of CB materials in particular is more tightly controlled than many other processes, such as those for imports or domestic trade activity, yet they still remain relatively easy to circumvent and/or circumscribe.

The assessments by the Joint Standing Committee on Foreign Affairs, Defence and Trade from 1994, and the Australian Audit Office Report from 1996, both identified the risks inherent within national export regulatory processes. The most salient point from both reports was the need for greater cooperation between agencies nationally. The reports highlighted a wide lack of consistency and uniformity throughout the application of regulatory measures, not just between jurisdictions, but within processes. For example, the disparity in the requirements for regulation, clearance and checking between imports and exports. While both reports were deficient in adequately addressing aspects of

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<sup>65</sup> Personal communication with Dr G. Shaw, Australian Safeguards and Non-proliferation Office, Department of Foreign Affairs and Trade, 28 May 2001.

security and risk in anything other than concerns over proliferation to state WMD programs, the Audit Office specifically identified a requirement for a number of processes to strengthen the regulatory system. Key findings were the identification of the need for the development and application of a risk management process, along with greater interaction with other regulatory bodies and industry in reporting and monitoring functions, particularly through mechanisms such as the Internet. Another key finding included the need to negotiate the number of physical inspections of defence-relevant export cargo with Australian Customs to better utilise an inspection regime based on assessed risk (as opposed to risk taking), which included the identified need for development and evaluation of compliance improvement measures. While there has been some incremental development throughout these two issues since the reports were released five years ago, overall there has been only limited change, particularly in the identified need for improved nationally harmonised risk management practices.<sup>66</sup> The premise could be that the export clearance and detection processes have been trouble free because Australia is not actively seeking to detect non-state capabilities. Measures have been aimed at a narrow and well defined range of designated goods and regulatory thresholds, consequently any measures imposed have then been restrictively focussed at certain phases or windows throughout the regulatory process.

### **Import Regulatory Processes: An Australian Model**

While there are aspects of commonality, the comparison between import and export regulation is generally quite marked, at least in the context of the regulation and control of CBR capabilities. With the exception of the collection of duties for imports and the regulation of certain prescribed items (as defined in the Customs Act 1901 and Quarantine Act 1908), the process is largely porous and, contrary to perception, generally unregulated. While there are regulation processes associated with the movement of foodstuffs, specified chemicals and animals, the regulatory controls on importation are generally only concerned with handling, storage and packaging as a function of the dangerous goods codes

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<sup>66</sup> See recommendations No 7 (Paragraph 2.39), No 14 (Paragraph 3.13), No 17 (Paragraph 3.42), No 20 (Paragraph 3.65), No 21 (Paragraph 3.75) Audit Report Number 26, op. cit., pp xvii-xxii.

and excise or duties collection. Importation of radiological and some defined biological materials, at least as a declared importation, are more tightly regulated, particularly if the biological material is pathogenic or infectious, and therefore classified as a risk, or identified as a one of fifty notifiable diseases. While biological materials are regulated within the Quarantine Act 1908, the importation of chemicals and dual-use goods generally falls under the Customs (Prohibited Imports) Regulations 1956.

The interesting aspect of the importation processes (including infectious materials imported with quarantine permits/licenses), is that once the materials have passed through national barrier controls, legally or illegally, regulation other than through measures imposed via transport and handling controls within various Commonwealth, State and Territory dangerous goods legislation, are for the most part non-existent.<sup>67</sup> While there are chemicals, pathogenic and infectious agents requiring importation licensing and end-use certification, such as sports, addictive and invitro-fertilisation drugs, most risk CBR materials are largely unregulated (at least in terms of importation regulatory requirements).<sup>68</sup> Ironically, the less potentially catastrophic category of materials, at least in the context of non-state potential for use, that is radioisotopes, have the widest ranging prohibitions. All radioisotopes are banned from importation unless the Minister has provided permission, or a specific import permit has been granted.<sup>69</sup> Radioisotopes are also one of the only materials, apart from invitro-fertilisation

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<sup>67</sup> There are specific handling and processing criteria within the Quarantine Amendment Proclamation 2000 Number 2 (Consolidation) which refer to the assessment that whilst the threat biological materials are in Australia, they present a low risk. Subsequent validation, disposal and end-use verification remains inconclusive and in nearly all cases, is not required.

<sup>68</sup> Importation requirements are established in Australian Quarantine and Inspection Service, *Impact Risk Analysis Handbook*, Canberra, 2000, (accessed 12 January 2001), [http://www.affa.gov.au/corporate\\_docs/publications/pdf/market.access/biosecurity/risk.pdf](http://www.affa.gov.au/corporate_docs/publications/pdf/market.access/biosecurity/risk.pdf). Regulation 5J of the Customs (Prohibited Imports) Regulations 1956 also regulates the importation of specifically Scheduled chemicals drawn from the Chemicals Weapons Convention, however, these incorporate barrier controls only and do not provide for regulation beyond entry. Regulation 4R within the Prohibited Imports Regulations, also provides for the prohibition of radiological substances, however, unlike the previous case for chemicals, many high activity or specifically identified isotopes are regulated and accounted for beyond importation barrier controls.

<sup>69</sup> See Customs (Prohibited Imports) Regulations 1956, 4R(2)(a), p 26.

imports, that are regulated beyond barrier controls through to end-use, disposal certification and reporting disclosure requirements.<sup>70</sup>

## **NATIONAL REGULATORY PROCESSES: INDUSTRY AND THE GOVERNMENT SECTOR**

### **Core Vulnerabilities: Determination of the Risk**

There are a myriad of processes associated with Commonwealth, State and Territory regulatory measures. However, analysis of the criminal, trade practices, health and security structures suggests that the adaptability and utility of regulatory controls, at least in the context of controlling micro-proliferation and the use of CBR capabilities, could only be described as grossly inadequate. In general terms there are elements throughout the national legislative and regulatory structures for CB capabilities that cover windows of activity within wider processes, however, they more generally apply to public and animal, health and safety measures, rather than CBR micro-regulatory control. Surprisingly, some of the strongest generic regulatory measures are those applied within the Trade Practices Act, however, these apply more to limitations in the sales and distribution of goods than to the regulation of specific agents. Similarly to other controls, they do not extend, other than to broad considerations of consumer liability and safety, to the regulation of these capabilities beyond the point of sale.

The paradox is that most regulatory measures are generally structured on the basis of cooperative agreements, self-regulation and self-assessment processes. There remain few mandatory reporting requirements and only minimal enforcement of compliance criteria. Apart from those measures swept up within various security related legislation, such as the Australian Security Intelligence Organisation Act 1979 and the Crimes Act 1914, there are few measures that incorporate the capacity by government authorities to search, seize, confiscate,

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<sup>70</sup> Personal communication with Director, Biological Services, Australian Quarantine and Inspection Service, 30 May 2001 & Australian Radiation Protection and Nuclear Safety Act 1998, (accessed 1 February 2001), [http://www.austlii.edu.au/au/legis/cth/consol\\_act/arpana1998487/](http://www.austlii.edu.au/au/legis/cth/consol_act/arpana1998487/).

restrict, report or arrest on the basis of suspicion or established activities in relation to the misuse of risk materials.<sup>71</sup> While there are themes within the controls that may allow for the limited prosecution of some activities involving the misuse of CBR materials, the cocktail of measures only serves to further erode the functionality, uniformity and the capacity for the effective application of any regulatory measures.

One of the key vulnerabilities in the regulation of CBR capabilities lies in the lack of flexibility to apply measures across different environments. This particularly applies to attempts to control and prosecute actions involving multiple party movements of services, equipment and materials, as either an import, export, interstate or intrastate transshipment. There remain few current end-use or disposal processes for the majority of risk CBR capabilities, despite increases within the last decade of production control and distribution regulation structures. End-user verification and control of the distribution processes generally maintains an inherent risk bias for those materials and equipment that may have a range of dual-use applications.

The large volumes, diffuse technologies utilised and dual-use nature of the materials, make many controls beyond the point of sale and into the public domain extremely difficult and arguably impossible to regulate completely. The enforcement of norms remains one of the biggest issues where too often the adoption of measures is confused with the capacity to ensure enforcement, when in fact the two issues are quite separate. Enforcement is further complicated when measures are only applied to particular periods or windows of activity, mostly occurring throughout the distribution process. The establishment of a circular process, which provides for a closure of trade activities, particularly ones involving risk materials, is ultimately the desired outcome.<sup>72</sup> While this appears

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<sup>71</sup> Australian Security Intelligence Organisation Amendment Act 1986, (accessed 12 February 2001). [http://www.austlii.edu.au/au/legis/cth/consol\\_act/asioa1979472/s4.html](http://www.austlii.edu.au/au/legis/cth/consol_act/asioa1979472/s4.html).

<sup>72</sup> Canada provides an interesting model in terms of the capacity to gauge and calibrate risk within the chemical sector. As part of the collection and reporting processes to support the Office of Prohibition of Chemical Weapons requirements for domestic reporting obligations within the Chemical Weapons Convention, the Canadian authorities collected all available information on companies and plants producing below Convention thresholds (this is not known to have been conducted by any other state party to the Convention). Their initial declaration had no cutoff requirement or level for reporting

as a relatively simple concept, it is in fact difficult in practice and predicated on the reliability of the information provided, not just by the vendor at the point of distribution, but throughout all transshipment points or intermediary parties within the cycle.<sup>73</sup>

The myriad of processes, controls and agreements within the national regulatory environment precludes the detailed analysis of each process. In general, national quarantine and inspection, barrier and exclusion and protection measures vary considerably, both in application and effectiveness. The next stage in reviewing the capacity of the existing controls and the expectations of national risk, involves analysing each of these functional areas to further identify aspects of risk, specifically risk advantages and opportunities for wider preemption across the framework and structure of each area.

### **Quarantine and Inspection Controls**

The Australian Quarantine and Inspection Service, Federal Police, Customs and Immigration services are all generally represented at most barrier and exclusion control nodes within Australia, as well as in some high volume and overseas entry points. There is, however, little tangible cooperation between agencies in aspects of intelligence and security, other than that which is coincidental due to co-location, as opposed to process driven structures, procedures and coordinated responses. While each agency does maintain a systemic process for profiling,

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scheduled chemicals, whereas current Convention regulations have a minimum of ten percent of the Convention thresholds for facilities that produce chemicals on schedules two and three. R. H. Burgess, Chemical Industry and the Chemical Weapons Convention, J. B. Tucker, *The Chemical Weapons Convention: Implementation Challenges and Solutions*, Monterey Institute Publications, Washington DC, 2001, p 37.

<sup>73</sup> The Office of the Prohibition of Chemical Warfare has attempted to have state parties reconcile their highest risk agents, that is schedule one chemicals, with production inputs, conversion, processing and final outputs in order to obtain a greater accuracy in the declaration process – but with little success. The process has proved extremely frustrating and ultimately unworkable, despite the relatively small production of agent and its distribution. If this is difficult within what should be carefully controlled and regulated processes (schedule one chemicals are the most tightly regulated and controlled under international and most domestic law), then the regulation, or specifically the disposal action of many other materials would prove significantly more complex. While this does not suggest that it cannot be achieved, particularly within a national regulatory framework, it would, however, require mandated and more effective reporting, monitoring and surveillance legislation to support any further initiatives for increased accountability of these materials. Personal communication with Dr G. Shaw, Australian National Safeguards Office, Department of Foreign Affairs, 15 May 2001.

with varying degrees of application and effectiveness, for both personnel and material interdiction, the practical application of profiling measures is also limited by resources and the volume of personnel and goods moving across the barriers.<sup>74</sup> Overall, the actual discriminatory vetting processes are rather cursory, and in many cases, such as those involving the importation and movement of blood samples, are relatively 'hands free'.<sup>75</sup>

Sampling and analysis through the use of technical detection systems have the potential to play a significant role in processing and discriminatory functions at barrier controls, yet current capabilities and technologies limit the application of these. Current interdiction capabilities are generally carried out through personnel checks although in some cases they may involve more technical measures for sampling and handling. Mostly, however, checking is by X-ray or explosive sampling of ethylglycol dinitrate, a common element throughout most secondary explosives. While organisations such as the Australian Quarantine and Inspection Service also conduct limited interdiction of mail and large cargo services using X-ray and explosive detection dogs, there is a paucity of other invasive or discriminatory detection capabilities (such as neutron spectrographic analysis and biological detection capabilities), employed and available at national barrier control points. The feasibility of these measures will always be limited, due largely to constraints on the portability and utility of many detection capabilities. There still only remains, however, an ad hoc and relatively unresponsive capacity (which is as much a function of processing), for the detection and analysis of most chemical and biological risk agents that might be

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<sup>74</sup> For example, the Australian Department of Immigration maintains a watch list of specific personnel through a database which draws on information provided and coordinated through a range of international agencies and collaborative agreements with other immigration services. Personal communication Mr T. Pollock, Director Intelligence Analysis Branch, Department of Immigration, 26 June 2001. Customs and Quarantine also maintain discriminatory processing systems, such as the EXIT system, however, a wider proportion of the information provided originates from the exporter, importer or is provided as information accompanying the goods.

<sup>75</sup> Clearance, including for all blood products, while still dependent on correct licensing and/or permits, is either controlled or prohibited in Customs and Quarantine regulations. Regardless, the movement of material, such as a wide range of blood products is an unchecked process, particularly when frequently established between international and national research and medical institutions. Personal communication with Director Biological Services Australian Quarantine and Inspection Service date 30 May 2001.

illegally moved into Australia.<sup>76</sup> Delays in the analysis of bacterial and viral samples, in particular, can range from days to weeks and is dependent on an effective culture, a correct assay or no obscuration from background contaminants. As a general rule, the shorter the timeframe required for analysis the higher the likelihood of false positives, suggesting that there can be no certainties in any guarantees from the scientific analysis of materials.

### **Protection Controls**

While legislation provides the enforcement framework for regulation, it is the micro-processes that provide the enforcement mechanisms with the specificity required. This is effected through either discriminatory processes at barrier nodes, such as those exercised through immigration, quarantine and customs measures, or through mechanisms such as industry stewardship agreements which regulate codes of conduct. In terms of punitive measures to prosecute misuse within the existing legislative framework, there are significant differences which depend on use, application, toxicity or the special handling requirements of the materials. Generally the more severe punitive measures are reserved for bodies corporate, companies or holdings, hence, the increased emphasis in protection controls towards environmental and exposure standards. While there are provisions within the range of protection controls for up to life imprisonment in some extreme cases, most (such as those within the Weapons of Mass Destruction Act 1995), generally provide for individual penalties of ten to fifty thousand dollars, with periods of detention of up to five years.<sup>77</sup>

The majority of import, export and domestic regulatory structures are derived from wider arms control and non-proliferation norms. Protection controls and their enforcement are generally spread throughout a diffuse and complex range

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<sup>76</sup> Personal correspondence with Director, Australian Government Analytical Laboratories and Director, Biological Services, Australian Quarantine and Inspection Service dated 23 April 2001 and 30 May 2001 respectively. This comment also draws on personal experience with Federal Police and sampling incidents over a period of seven years from 1993-2000 in the author's capacity as Officer Commanding the Australian Defence Forces Chemical and Biological Response Elements.

<sup>77</sup> Chemical Weapons (Prohibition) Act 1994, Part 2, Section 12, p 12.

of statutory organisations and industry associations.<sup>78</sup> In the main these are administered and enforced through either the Department of Foreign Affairs and Trade, the Australian Customs Service, the Department of Transport and Regional Services, the Department of Environment and the Department of Health and Aged Care or the Department of Defence. In terms of attempting to quantify research and trade activity throughout the CBR sectors, when the ratios in volumes of dual-use and CBR risk materials are compared to overall industry and government trade activity, it would be unlikely to exceed a ratio of one to twenty.<sup>79</sup> While the ratio is a broad ranging estimate, it provides a perspective of the potential risk relative to the overall volume of activity. The conclusion based on volumes alone, is that there will always be an element throughout the CBR activity spectrum that will remain largely outside stringent protection controls. This may be through either a lack of visibility or the risk is not commensurate with the requirements for increased regulation.

A core aspect within the structure of protection controls are those measures involving monitoring and surveillance, yet there remains only a limited range of these measures (see Appendix One and Two for a review of those associated with specific regulatory legislation and controls) adopted or enforced throughout the CBR regulatory continuum. Most are in fact applied through a process of self-regulation or industry agreement, rather than through a mandated or statutory legislative requirement. Current monitoring and surveillance

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<sup>78</sup> See Environment Australia, *op. cit.*, pp 1-32, and Biotechnology Australia, *op. cit.*, pp 21-48. Interestingly both reports acknowledge the wide array of diffuse controls regulating the relevant sectors. The report commissioned by Environment Australia, concludes that for the regulation of chemicals, the structure of the processes and layout of legislation is confusing and difficult to access.

<sup>79</sup> The figure of not greater than five percent of overall trade (commercial and government) activity of 'risk agents, micro-organisms, toxins and radioisotopes' is an estimate by the author and is based on figures for 1997/1998 of dual-use goods and military exports, compared to volumes of national production, distribution and use. Exports (which is one of the few regulatory and enforcement processes that captures data on dual-use and defence goods of a lethal and non-lethal nature) of dual-use goods was valued at A\$302,100,334, compared to capacities of production by chemical producers of A\$35 billion for 1995/96. Estimates of the biotechnology sector are not currently captured, however, estimates by Ernst and Young of core biotechnology company revenues was approximately one billion dollars. One of the difficulties in reflecting the range of dual-use activities and trade, however, is the exclusion of export activities within the defined criteria of the Defence Strategic Goods List. That is, there remains no empirical source of data or industry bench mark on which to make an accurate estimate. Even personal communication with the Australian Bureau of statistics does not allow the data on chemical commodities to be further broken up into applications related to dual-use, lethal and/or non-lethal. The Strategic Trade and Policy Operations Section within Defence remains the only organisation that captures data of this nature, which in itself is based only on export requests. Consequently the ability to calibrate national activity in dual-use goods can only be described as an indeterminant process.

mechanisms focus primarily at the front end, from production through to distribution and sale, however, outside these areas few other surveillance measures are applied or enforced.

The wide variation in physical characteristics of materials provides for a spectrum of different monitoring and surveillance mechanisms. The types of monitoring and surveillance processes vary based on the type of agent, with toxicity and public safety being the primary drivers for the types of processes and reporting adopted. In some cases, the processes involve follow-up sampling, yet in others it is a case of reporting by exception, such as those mechanisms that operate within the public health surveillance systems and monitor incidents of health reporting (as opposed to those that report on misuse or breaches of conduct). In many cases, particularly in self-regulatory processes, while there appears to be a range of monitoring and surveillance measures, they remain generally passive and provide little relevance to considerations of security and accountability of the CBR materials.<sup>80</sup> Key controls with these processes include:

- **Chemical Protection Controls.** Monitoring and surveillance of chemical agents is in the main dependent on the mammalian toxicity, application and the quantity of the agent. Higher risk chemical agents, generally those included in the Defence Strategic Goods Lists and as scheduled chemicals within the Chemical Weapons Prohibition Act, are controlled on the basis of the facility they are used within and their propensity for misapplication. This may include aspects of regular reporting, including in some cases end-use and disposal action, however, this is in the main dependent on the declared quantity. For example, schedule three chemical facilities where less than 30 tons are produced annually do not require declaration or reporting under national reporting requirements established in the Chemical Weapons (Prohibition) Act 1994 (compared to schedule two chemicals where less than one ton does not require reporting or declaration). Outside of the defined schedules for chemicals, there are other agents where monitoring and

reporting is required, along with end-use and disposal verification, however, these are normally schedule eight and nine poisons and drugs (drugs of dependence and sports drugs). Monitoring and surveillance is also often extended beyond the specific agents and directed at a particular sector or industry. For example, the Plastics and Chemical Institute of Australia maintains a product stewardship and responsible care initiative program which depends on a process of self-regulation to enforce monitoring and surveillance regimes. It is specifically targeted at ensuring greater accountability within the chemical industry and while it operates beyond what the law requires, it still fails to adequately incorporate or maintain the capacity to enforce aspects of security and industry conduct.<sup>81</sup> While there are other regimes which draw on surveillance processes to assist in enforcement of the regulatory criteria, these are predominantly aimed at adverse drug reaction reporting, promotion and advertising, and the provision of orphan drugs (generally refers to pharmaceuticals for rare diseases).

- **Biological Protection Controls.** Within all the categories of agents, regulation processes for biological materials are the most ill-defined and porous, with trade and research taking place in a largely vacuum environment. The monitoring and control of biological materials for animal and agricultural products is largely facilitated through the Australian Quarantine and Inspection Service. Controls involving human pathogens, infectious agents and zoonotic diseases are the responsibility of the Department of Health and Aged Care. Rather than using protection controls,

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<sup>80</sup> For a summary of regulatory monitoring and surveillance processes associated with the management of chemical infrastructure services within Australia see Environment Australia, *op. cit.*, pp 57-60 and 132.

<sup>81</sup> Membership by industry within Australia in the Plastics and Chemical Institute Stewardship Program is approximately 95 percent by volume. While the Program requires participating producers, distributors and vendors to 'qualify' by the adoption of certain principles embodied within the Program's constitution, the process remains self-regulatory and is based on the veracity of the self-assessment process applied by the participating members to themselves. The program does, however, include a commitment for responsible behaviour within its Stewardship Program which specifically identifies a qualifying criteria of health, safety and the environment, and implicit within this the Association claims are aspects of security (although these are not declared). While a process of self-regulation will always remain of limited value and veracity, the Plastics and Chemical Association initiative is one of the most progressive and responsible programs established within Australia by any industry association, particularly as it is industry initiated and monitored. The model and structure of the Program itself provides for significant potential, particularly for application within the biotechnology sector, to be further expanded throughout many other commercial sectors. Personal communication with Dr Margaret Mathews, Director Business Development, Plastics and Chemical Institute of Australia, 9 May 2001.

measures applying to the regulation of biological materials are predominantly based on barrier and exclusion controls. Measures are largely focused at higher end biological safety facilities and accreditation of the handling and processing capacities, as opposed to controls involving end-use and disposal certification of risk materials. Similarly to the importation of radioisotopes, all pathogenic organisms and infectious diseases imported into Australia require a permit or licensing (dependent on the agent). This is granted by the Australian Quarantine service on the basis of the assessed risk. While the risk assessment includes considerations for misuse, these are more through inadvertent release or cross contamination rather than deliberate misuse.<sup>82</sup> There are numerous microbiological agents, such as the ebola virus, that are prohibited for importation into Australia either because containment is limited, the risk is too great or there is simply not the justification for entry. For nearly all products, including infectious and pathogenic materials, monitoring and surveillance beyond those barrier and exclusion controls is largely discretionary (with the exception of invitro fertilisation products).<sup>83</sup> Unlike a large proportion of the chemical industry, however, most do not even operate within a self-regulatory or self-assessment environment.

- **Radioisotopes Protection Controls.** Regulation processes involving radioisotopes involve some of the more stringent protection controls, which often also include pervasive monitoring and surveillance processes. In addition to reporting, accountability and surveillance requirements, dangerous goods and customs regulations attempt to enforce strengthened handling, transport, distribution, licensing, packaging and storage

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<sup>82</sup> The risk assessment model is based on the Impact Risk Analysis Handbook, op. cit. In essence, the risk analysis is based on routine and non-routine entry conditions for biological materials being imported into Australia. The process is controlled by Biosecurity Australia, which is within the Market Access and Biosecurity Business Group of the Australian Agriculture, Fisheries and Forestry Australia. It is this group which is responsible for the development of all new and existing policy on imports of animals, plants and derivative products. The Risk Analysis processes, as detailed within the Handbook, are still predominantly mechanical in their application, where risk is determined by a prescriptive formula identifying key agents and criteria against which vulnerabilities are subsequently assessed. The risk process appears to be closely modelled on the quantitative risk analysis process as defined in Standards Association of Australia, *Australian Standard 4360 Risk Management*, Sydney, 1995.

<sup>83</sup> Personal communication with Director Biological Services, Australian Quarantine and Inspection Service dated 30 May 2001.

requirements in the management and security of radioisotopes. Interestingly, unlike the regulatory structures for chemical and biological materials, regulations covering the controls of radioisotopes are predominantly administered and enforced by the Commonwealth (other than below certain thresholds or within windows of activity, such as, during land transport). Regulation is broadly derived from North American and International Atomic Energy Agency standards, which are mainly directed at measures for storage, accountability handling and transport. The only significant regulatory measures, however, specifically security focussed, are those covering export controls which are administered through the Defence Strategic Goods List.<sup>84</sup> The significance of this is that there are only a few radiological isotopes covered within these control lists (other than plutonium and uranium weapons material specific to applications within the nuclear power and weapons industry – which are controlled under regimes such as the Nuclear Non-Proliferation Treaty).<sup>85</sup> This management process is in part facilitated through the Australian Safeguards and Non-proliferation Office who are responsible for legislation implementation and Australia's reporting obligations within the Nuclear Non-proliferation Treaty.

### **Barrier and Exclusion Controls**

Inspection controls cover a wide range of measures with the most notable concerned with immigration processing. Discriminatory immigration processes are established along the same criteria as export and import processing. The main basis of assessment within the immigration processing and vetting system is derived from declared traveller information. While there are a range of

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<sup>84</sup> The export controls referred to are regulated through the Customs Act 1901 Regulation 13 E and pertain to exports of alpha emitting radionuclides having an alpha half-life of 10 days or greater, tritium or its compounds and radium or its compounds (there are threshold limits for the tritium and radium compounds). There are also controls regulating Boron, Beryllium, Zirconium, Helium-3, Hafnium and Lithium. See the Department of Defence, *Guide for Exporters. Defence Strategic Goods List*, Canberra, November 1996, Part 3, Cat 1 – Materials, Chemicals and Toxins, 1C225 to 1C237.

<sup>85</sup> The United States Nuclear Regulatory Commission, which is used as one of a range of technical authorities by the International Atomic Energy Agency in establishing international and national standards, does not monitor isotopes with activity levels less than 0.002 micro curies/gram. This is approximately the natural level of radiation detectable in food and soil. Additionally, due to short half-lives in many isotopes used within industry, their utility is even further reduced.

processing and profiling checks conducted at, and beyond, the barrier control nodes, once entry is achieved, there are no further regulatory processes required, with the exception of certain entry and visa compliance requirements for specified entry status, such as those for students.<sup>86</sup> While immigration capabilities are enhanced through interaction with other national and international agencies, validating information provided and identification of risk categories of personnel outside the typology applied in standard profiling checks, is generally applied as a mechanical and non-invasive process.

In the main, immigration processing and clearance measures are aimed largely at the detection of criminal activities and unless there is a strong association or previously known record, detection when entering Australia remains unlikely. One key process which remains a core vulnerability throughout CBR regulatory controls is in the potential of foreign students and researchers working in Australia. These foreign nationals are assessed by immigration and other specialist agencies on their relative proliferation risk, yet this often remains an uncertain and often discretionary process.<sup>87</sup> Immigration vetting takes many forms and in theory attempts to look at WMD potential using a range of standard checks, but in the main is focussed on criminal and people smuggling activities, unless otherwise notified. A non-standard check (which would only be by request), may include assessments of research work to be undertaken, type of access, dual-use utility of activities, established prior associations (facilities and known personnel), sensitivity of research undertaken and previous research work known (versus declared).<sup>88</sup> More pro-active counter-measures could include increased background checks, more pervasive and effective profiling, wider international cooperation between agencies and the strengthened monitoring,

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<sup>86</sup> Personal communication Mr T. Pollock, Director Immigration Intelligence Analysis Services, Department of Immigration, 26 June 2001.

<sup>87</sup> Proliferation risk is a wide ranging and indeterminate concept. Australia actively seeks foreign participation and engagement in tertiary, research and collaborative foreign projects, both from the skill and technical benefits derived by Australia and through the provision of full fee paying students to the national academic institutions. Australia is required to regulate all specified dual-use and defence goods as part of its international obligations. These requirements are both stated and implicit in participation in the Australia Group, Wassenaar Agreement, Missile Technology Control Regime and the Nuclear Suppliers Group.

<sup>88</sup> Personal communication Mr T. Pollock, Director Immigration Intelligence Analysis Services, Department of Immigration, 26 June 2001.

surveillance and enforcement of visa compliance requirements. However, all of these measures involve either significant resource liabilities or impact on considerations of social justice and equity.<sup>89</sup> While the regulation and clearance of foreign nationals is an increasing area of concern, it remains one of the most difficult areas in which effective preemption can be applied. As a consequence, the process is defined more by risk taking than the management of risk

## **INTERNATIONAL AND NATIONAL REDUCTION AND ENFORCEMENT MEASURES.**

### **Legislating Against The Risk – Enforcing Controls**

The difference between international and national legislation is not just in its structure and application, but in its interpretation and enforcement. Australia generally accedes to most international arms control and regulatory conventions, treaties and regimes where relevant, and in many cases has been at the forefront of the ratification and development processes. For example, Australia was the initiating country for the establishment of the Australia Group Controls as well as providing much of the initial impetus for the adoption of the Chemical Weapons Convention. Despite the intent and expectations of many of these regimes to regulate non-state capabilities and development, most provide nothing more than the pretence of regulating non-state activities.<sup>90</sup> By the very nature of the development of these regimes, that is by consensus, they are too often not

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<sup>89</sup> Possibly one of the best established examples of the proliferation of WMD technologies and services is with the development by Iraq of its indigenous WMD capability, pre and post the 1990 Gulf War. In addition to attempting to procure a range of dual-use goods and services for import, Iraq engaged in a deliberate and well orchestrated program of deceit and subterfuge, operating through foreign research and study opportunities provided to Iraqi students and researchers by many western and European countries, particularly during the period 1978 to 1984. One of the better examples is the training in microbiology received by the eventual Director of the Iraqi offensive biological warfare program, Dr Rihab Taha, in the United Kingdom throughout the late 1980s. For further information on the proliferation of WMD technologies, and proliferant countries, see United States Central Intelligence Agency publication - *Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions 1 January through to 30 June 2000*, Washington DC, (accessed 15 December 2000), [http://www.cia.gov/cia/publications/bian/bian\\_feb\\_2001.htm](http://www.cia.gov/cia/publications/bian/bian_feb_2001.htm). Also Kraatz-Wadsack, op. cit., and Office of Technology Assessment, *Background Paper: Technologies Underlying Weapons of Mass Destruction*, pp 2-36.

<sup>90</sup> For a detailed examination of regime theory see J. Ruggie, *Multilateralism Matters*, Columbia University Press, New York, 1992 & R. Keohane, & L. Martin, 'The Promise of Institutional Theory', *International Security*, Volume 20, Number 1, Massachusetts Institute of Technology Publication, Cambridge, 1995.

pervasive enough, lack specificity, abrogate enforcement actions to national jurisdictions and lack the capacity to enforce any compliance requirements. While some norms maintain the requirement to ensure there is commensurate supporting national legislation (mainly in the areas of chemical and nuclear materials), there is often little more than a sense of obligation to compel state parties to comply. That is, most lack mandatory benchmarking, reporting and continuous monitoring protocols that might better lend credibility and ensure wider effectiveness of any measures.

There are generally considered to have been four stages in the evolutionary cycle of the structure and development of international WMD non-proliferation norms. The first stage involved those international regimes that attempted to prohibit the use of unconventional types of weapons – without a great deal of specificity, such as the 1907 Hague Convention. The second is where these regimes were then expanded to fill gaps in use and application, such as the 1925 Geneva Convention. The third involved the expansion of the norms to specific protocols, such as those within the Chemical Weapons Convention (1993), Biological Weapons Convention (1972) and the United Nations Convention on the Suppression of Terrorist Bombings (1997). The fourth stage, which has yet to develop, will likely involve the imposition of strengthened enforcement and compliance measures. These would seek to incorporate asymmetric and non-state activity, however, congruity in this stage is still possibly at least a decade or more away.<sup>91</sup> It is this stage of development within international norms that should provide for the greater potential in attempts to control and prosecute strategic activities involving non-state CBR development. The success, or otherwise, of any of these measures will, however, be dependent on national regulatory structures which will need far greater reform prior to any

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<sup>91</sup> For example, current initiatives within the Biological Weapons Convention are struggling to agree on suitable verification and monitoring protocols. This has inhibited the development of the Convention for over a decade. Given the likely outcomes when the regime is finally agreed to, it appears it will provide only the pretence of verification and control and is unlikely to stop countries already involved in offensive biological warfare from continuing. In early 2001 negotiations collapsed and the United States withdrew from further negotiations, citing frustrations in the overall effectiveness of the regime due mainly to the lack of enforcement and compliance capacity within the structure of the Convention. J. Eldridge, 'US Baulking at bio-weapon protocol brings some obvious hitches to the fore', *Janes Defence*, 25 May 2001, (accessed 6 June 2001), [www.janes.com/defence/news/misc/nbc010525\\_1\\_h.shtml](http://www.janes.com/defence/news/misc/nbc010525_1_h.shtml), and 'Germ Warfare Rules Need Changes, White House Told', *The Washington Post*, Associated Press, 21 May 2001, (accessed 6 June 2001), <http://www.washingtonpost.com/wp-dyn/articles/A53450-2001May20.html>.

internationalised consensus being achieved. Hence, it is in what could be described as this ‘interim period’ or ‘transitional stage’, of international non-proliferation development, that greater emphasis should be shifted towards national legislation and jurisdictions to effect the widest ranging counter-measures against non-state and CBR micro-proliferation – in a sense leading the way ahead.

Current international non-proliferation chemical and biological norms lack the capacity to curb activities by non-state actors, with most limited in application to state party controls on use, production, stockpiling or development. While there are a plethora of ancillary conventions which attempt to establish international normative practices against terrorism, such as those activities which may occur offshore, in aircraft or in international waters, these provide for little relevance in further controlling the technical capabilities or escalatory capacities of organisations.<sup>92</sup> Even despite these normative regulatory structures, there remains little deterrence value or preemption, other than through seeking to establish the universal abhorrence in the act of terrorism or the use of these types of capabilities.

Enforcing compliance against state parties will always remain as the greatest challenge to international norms. At the crux of their strength is also to be found their weakness. That is, the involvement by state parties in these practices will nearly always be based on a participative and conciliatory approach, ultimately reducing the impetus and imperative to take decisive action nationally or against other similarly aligned or sympathetic state parties. Additionally, as had been acted out by various aggrieved countries in the chemical and biological weapons convention, selective definitions of agents and a range of confused

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<sup>92</sup> While some of the international treaties and conventions may mention CBR terrorism, such as the United Nations Convention on the Suppression of Terrorist Bombings, most terrorism treaties are quite specifically targeted, with no direct relevance to CBR activities. For example, The Convention for Suppression of Unlawful Seizure of Aircraft (1970), Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation (1971) and International Convention Against the Taking of Hostages (1979). The key aspects which these conventions incorporate, which current conventions such as the Chemical Weapons Convention lack, are those measures in relation to the extradition of offenders found within the respective state party’s territory and in breach of the Convention. The state party then provides jurisdiction over individual offenders and obligates the state party to hand over the alleged offender(s) to another State or international tribunal.

interpretations of what agents, equipment, services or actions constitute a breach, will always be the tools of deception, subterfuge and trickery by those more scurrilous participant state parties.

One of the key measures available within the scope of most international regimes is the imposition of sanctions, such as those involving trade embargoes, freezing and confiscation of assets and diplomatic isolation. The relevance, however, of these measures against non-state actors is extremely limited, particularly given the ephemeral nature of the organisations and people associated with them. The response by states, individually or collectively, through the use of force, will always be a limited option. Ironically with non-state belligerents, any counter-actions are entirely predicated on the identification of a target, whatever the counter-measures adopted. Given the too often counter-productive results and potential divisiveness in any outcomes achieved, a credible counter-response or retaliatory strategy should seek to supplant or relegate the use of force as the last possible option.

In essence acceding to, or ratifying, international norms is the easiest step. Articulating the regulatory requirements into legislation and adopting them within a national framework, particularly one that provides for effective enforcement, is the far greater challenge for state parties. Paradoxically, more often there is only a modicum of effort necessary to provide for improved legislation, yet further developing the national regulatory requirements rarely progresses beyond reaffirming the extant requirements established within international norms.<sup>93</sup> Australia is not unique in its lack of national regulatory measures. The significant difference being, however, that Australia has the

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<sup>93</sup> Personal communication with Manager, Dangerous Goods Policy Unit, Land Division, Department of Transport and Regional Services, 7 May 2001. Personal communications with Director Export Services, Australian Quarantine and Inspection Service, 23 April 2001. Personal communication with Director Business Development, Plastics and Chemical Industries Association, 22 May 2001. Personal communication Director Biological Services, Australian Quarantine and Inspection Service, 30 May 2001. While all of the personnel listed conveyed a range of personal opinions on the capacity of current controls, all agreed that in terms of those security measures designed to mitigate against misuse or covert acquisition of CB materials, the current regulatory measures are deficient. All cited a lack of uniformity, flawed structures, inadequate enforcement and reporting/monitoring/surveillance systems as contributing to the overall deficiencies in security measures. All cited a stronger role for the Commonwealth in regulating these measures, as opposed to existing diffusion of controls throughout the states and territories structures, as a critical step in any further regulatory reform.

opportunity to change through its own impetus, rather than through pressures exerted from critical internal or international non-state threats.

### **Overseas Regulatory Legislation: A Comparative Analysis**

There are too many processes involved in the regulation of CBR capabilities within each country to analyse within the limited scope of this thesis. The main themes, however, within the broad regulatory structures of most major western democracies, are the differences in the adoption of national regulatory measures and how they are applied. Ironically, however, nearly all result in similar outcomes – a relative ineffectiveness in countering micro proliferation and the development of CBR capabilities. Australia, Canada, United Kingdom and the United States all participate within the same chemical and biological regulatory regimes, albeit with different agendas and interpretations on the varying requirements of these international norms. The differences are most evident within the structure of the legislation that underpins regulation, the philosophical approaches to enforcement of measures and the capacity within each country to prosecute belligerents.

In the case of Australia, legislation specifically codifying actions against CB micro-proliferation and or actual use is embedded throughout a range of jurisdictional controls, however, few of these measures are targeted specifically at mitigating actions of non-state development or micro-proliferation. Similarly, Canada, United Kingdom and the United States have through various jurisdictional and ethnocentric interpretations, introduced national legislation criminalising specific aspects of the Chemical Weapons and Biological Weapons Conventions. The application of the wider regulatory legislation, however, still remains directed primarily at the control of stockpiling, weaponisation and the use of WMD by state parties.<sup>94</sup> Interestingly, there have been no prosecutions or

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<sup>94</sup> The United States maintains Title 18 United States Congress. 2332C Chemical Weapons: Prohibited Acts and Penalties. Canada maintains the Chemical Weapons Convention Implementation Act (which as at February 2002 was still not introduced into Canadian law) and United Kingdom introduced The Chemical Weapons Act 1996. All of the legislation, with the exception of some criteria within the United States legislation (not related to non-state actors), is based on the Scheduled Chemicals and processes defined within the Chemical Weapons Convention 1993.

convictions of breaches against the chemical or biological acts within Australia, Canada or United Kingdom.<sup>95</sup>

The United States is one of the few countries that maintains specific measures beyond generic WMD or terrorist legislation. Measures are primarily aimed at the application of strengthened punitive penalties rather than the enforcement of mandated domestic reporting, surveillance or monitoring regimes. One of the corner stones of the United States CBR and WMD legislation is the Federal Act, Title 18 United States Congress, Section 2332a, or what is more commonly referred to as the Nunn-Lugar-Domenici Act. This is a Federal Act aimed specifically at those individuals who use 'certain weapons of mass destruction', which is defined as:

... any weapons of a device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination or impact of toxic or poisonous chemicals or their precursors, a disease organism, and/or radiation or radioactivity.<sup>96</sup>

The United Kingdom, Canada and United States all maintain a range of ancillary legislation directed primarily at conventional terrorist activities, types of targets or the provision of assistance to terrorists. Similarly, all focus a large range of their legislative controls at the export regulatory process, as opposed to domestic regulation of activities. These measures are in the main derived from the impetus of international conventions, treaties and regimes such as the Biological Weapons Convention, Australia Group Controls and Chemical Weapons Convention. However, the United States legislation is more

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<sup>95</sup> Similarly to Australia's legislation of the Biological Weapons Convention 1972 which is encapsulated within the Crimes Act (Biological Weapons) 1976, the United Kingdom maintains the Biological Weapons Act 1974. The United States maintains Title 18, United States Congress Chapter 10, Biological Weapons, and has subsequently codified *inter alia*, another supporting Act on biological agent/weapons control and use - the Biological Weapons Anti-terrorism Act 1989. Canada has adopted Bill C-87 covering the Chemical Weapons Convention as well as introducing in October 2001 Bill C-36 which is the Canadian Anti-Terrorism Act, which like the United Kingdom, covers the misuse of chemical and biological materials.

prescriptive and generally applies harsher punitive measures, with many of the crimes being established as capital offences, particularly those aimed at terrorism or associated with its activities (which could also potentially include threats of use – as opposed to actual use). These measures extend to a range of legislative controls which cover trafficking, smuggling, trading, laundering, material support and awarding of rewards.<sup>97</sup> The United Kingdom, however, maintains strengthened enforcement powers within Section 14 of The Prevention of Terrorism Act 1989, which while not specifically mentioning CBR use, provide for the application of increased punitive measures, including wide powers of arrest, search and seizure, against persons associated with, or involved in, terrorist activities (which could possibly be effectively applied to non-state interdiction).<sup>98</sup>

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<sup>96</sup> United States Congress, *op. cit.*, pp 58-59.

<sup>97</sup> Legislation within the United States that is applicable to the enforcement of measures against terrorist (conventional and non-conventional) activities includes (but is not limited to):

- Title 18 United States Congress. 2339A and 2339B - criminalises the provision of material support to foreign terrorist organisations.
- Title 8 United States Congress. 601 and 602 - requires the deportation or exclusion of non-United States nationals involved in terrorism.
- Title 18 United States Congress 2332 and 2332B – covers jurisdiction, national boundaries and acts of homicide as part of coercive or retaliatory actions against the United States Government or population.
- Title 18 United States Congress 545 – smuggling.
- Title 50 United States Congress (APP) 2410 – export control regulating dual-use commodities and services (This is one of the only provisions within the four countries implementing legislation that seeks to regulate elements of service provided, albeit, the application of the Act would be difficult).
- Title 18 United States Congress 1956/1957 – regulates the specified unlawful activities in relation to money laundering and provides for the seizure, confiscation or release of goods, monies or services involved in terrorist activities (conventional or non-conventional).

<sup>98</sup> Following the 11 September 2001 terrorist suicide attacks in the United States and the spate of anthrax bioterrorist mail attacks in the two month period that followed these, the United Kingdom introduced a range of legislative changes in an attempt to counter increasing public concerns over the potential for misuse of biological agents. The changes sweep up amendments to the Ministry of Defence Police Act 1987, Terrorism Act 2000, Crime and Disorder Act 1998 and the Criminal Justice and Public Order Act 1994. The Anti-Terrorism, Crime and Security Bill 49, while covering a range of issues, deals specifically with an attempt to acquire, transfer, develop, possess, use or employ any type of CBR capability. Part 7, Section 58, Sub-Section 4 provides for the legislation to apply throughout the spectrum of CBR materials and capabilities. Of particular importance, is the shift from simply the control of exports to measures that also seek to control transfer and customs measures to inhibit micro-proliferation, nationally and internationally (see Part 6, Sections 2 and 3). The most significant aspects in the legislation, however, are the industry-wide reforms on use, storage and handling of legitimately held materials. There are strict reporting, monitoring, surveillance and declaration requirements for materials, shifting reporting obligations from the passive to the active (see Part 7, Sections 59, 60 and 61). The major flaw throughout the legislation, like in many of the Australian regulatory structures, is in the definitional criteria against which these measures are to be applied. While the legislation is directed at all deleterious substances, prosecution still remains predicated on proof that the materials or capability are in fact deleterious in nature. That is, in attempting to provide widest ranging measures, the legislation still lacks the technical specificity and performance based outcomes that would be needed to actually effect the

One of the more interesting cases of a country attempting to regulate against CBR capability development (as opposed to micro-proliferation), is Japan. The international spotlight on Japanese legislation as a result of the Aum Shinrikyo Cult's use of sarin nerve agent in 1995, highlighted the pretence throughout the range of its extant national regulatory controls. While the CB capability development by the Cult was attributable to numerous factors there is little contention that a porous and unregulated environment contributed to (and in some instances accelerated), the Cult's CB capability development. Immediately following the Cult's subway attack using sarin on 20 March 1995, Japan introduced two specific anti-terrorist laws. The specificity of the laws, however, appears to have reduced the effectiveness in the intent of the legislation, that is, to regulate against the development of CB capabilities within Japan by groups, or individuals, through prohibiting specific actions, outcomes and in defining the types of materials and agents that are illegal.<sup>99</sup> While there have been no recorded prosecutions under this legislation, it does serve to highlight a potential vulnerability in attempting to apply rigid or specific legislation without the counter-balance provided by supporting criminal and terrorist measures. The need to adequately balance considerations of risk, and thereby better define outcomes, reaffirms the continuing requirement for the inclusion of intent and capability within the wider structure of legislation.

In terms of the general effectiveness of legislative controls, with the exception of strengthened terrorist enforcement measures, the United Kingdom, Canada and

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wide reform intended. United Kingdom Parliament, Anti-Terrorism, Crime and Security Bill 49, (accessed 12 November 2001), [http://www.homeoffice.gov.uk/oicd/antiterrorism/bill\\_summary\\_v9.1.pdf](http://www.homeoffice.gov.uk/oicd/antiterrorism/bill_summary_v9.1.pdf).

<sup>99</sup> Japan introduced two key laws following the March 1995 sarin gas attack by the Aum Shinrikyo Cult.

- Prevention of Injury to Person of the People Caused by Sarin (Promulgated on 21 April 1995). This law aims to increase public safety by prohibiting the use, manufacture or possession of sarin (and other toxic chemicals although this is not well defined within the legislation as it refers to those agents stronger than sarin)
- Prohibition of Chemical Weapons and Regulations of Specific Chemicals (Promulgated 5 April 1995 – noting the date of the subway attack on 20 March 1995) this is similar to most state parties where countries are obligated to introduce national legislation to enforce the Chemicals Weapons Convention. (Japan also maintains a law on the Prohibition of the Development, Production and Stockpiling of Bacteriological [biological] and Toxin Weapons and their Destruction – similarly to most other countries, this enacts the Biological Weapons Convention within domestic legislation – promulgated 8 June 1982)

Australia maintain similar types of legislation, focusing much of the effort towards the regulation of exports, immigration and barrier controls. The United States application of wide ranging powers enabled through specific WMD legislation is the exception, rather than the rule (see section 4, footnote 94). Despite some similarities, the significant differences are exemplified in the context against which the legislation is set, that is, the different threat environments which remains the most significant issue in determining a preparedness by a state to take firm and decisive action towards curbing the development of WMD capabilities by belligerents. The most effective legislation and regulatory environment, however, remains somewhat moot if state parties then eschew the principles of action or lack the political imperative to act firmly against these escalating asymmetric threats. It is not the cases of well defined and established use of the weapons against which the capacity of any legislation and regulation is to be calibrated. Rather, it is the ability to interdict, prosecute and vitiate those less defined aspects in the capability development process that ultimately defines the efficacy of any counter-measures.

## CONCLUSION

The existing suite of Australian CBR WMD regulatory structures is largely predicated on the anachronistic assumption that the current and projected national threat environment does not provide the necessary impetus for change. Yet the case for change should not simply be derived from only those visible or known activities, or indeed a lack of threat, but on considerations of risk. Regardless of the level of threat, it is society's capacity to deter threats, rather than just its response to them, that is ultimately the determinant of the efficacy of any national security strategies. Consequently, it can only be concluded that the current regulatory framework which attempts to provide for any measure of preemption is based on expectation rather than assurance (or indeed insurance as well).

Generally those influences that reduce the efficacy of CBR WMD regulatory controls and structures can be identified against three core vulnerabilities. The

first, and most critical of these vulnerabilities, is a lack of uniformity. This is not simply limited to issues between jurisdictions and the Commonwealth, but includes considerations of efficacy, priority and strategies, and permeates wider normative practices than simply those applied to the regulation of CBR capabilities. The second vulnerability is the lack of capacity and capability to enforce compliance. This extends beyond considerations of increased punitive measures and is fundamental in providing for a secure and effective preemptive deterrence strategy. It is as much about the capacity of the legislation as it is in the ability to apply it to a range of potential threat activities and environments. The third vulnerability is a lack of preemption within the scope of the existing regulatory structures. Simply expressed, deterrence measures cannot be applied if the activity, material, equipment or service is not regulated. These limitations also extend to considerations of detection, reporting, monitoring and surveillance, where if the discriminatory processes do not identify or recognise signatures, then the capacity to understand and assess risk is derived simply from subjective perceptions.

The fundamental aphorism in understanding risk is in knowing that future results could differ from expected or projected results. There can be little prospect of certainty in any of the existing models for non-state trends, behaviour and outcomes. Effectively mitigated and managed risk depends on the accurate calibration of threat. Yet the existing national climate of risk taking provides for little capacity to effectively deter non-state micro-proliferation or use of CBR WMD capabilities, providing little more than the laws of probability and chance in the determination of risk and the outcomes that might follow. In essence, vulnerability is transposed from residual risk to a potential threat in that society's capacity to accurately estimate risk is not just eroded, but potentially inaccurate. The results from this lack of understanding of risk resonate throughout non-proliferation and counter-proliferation efforts, resulting in inefficient counter-measures and no preemptive capacity within the structure of national controls.

The determination of deterrence draws on a wide array of covariances and is as much a social, cultural and economic process, as it is in establishing technical regulatory safeguards and in defining normative practices. Regardless of the

environment in which controls exist, self-regulatory or mandated, the fundamental basis on which deterrence strategies are based is simple, yet it continues to elude most state parties' attempts to achieve strengthened controls for CBR capabilities. The essence in the development of controls, whether legislative, regulatory or derived from government policy, is predicated on four broad principles.

- The first principle is the need for clear, simple, coherent, well articulated and defined controls and regulatory structures – *clarity of intent*.
- The second principle is in ensuring there is a clear correlation between any safeguards, the intent and the policy of the state party – *coherence in national strategies*.
- The third principle is to be found in ensuring the processes provide for capacity and capability within the scope of the regulatory structures without the bog of bureaucracy, yet maintain the ability to collect, process, collate and analyse information requirements – *efficiency in application*.
- The fourth principle is found in the need to ensure deterrence structures can be estimated and calibrated against known and potential activities. This includes the capacity to incorporate technological and innovative change as well as minimising structural shifts, whether politically derived or imposed through crisis – *efficacy in the controls*.<sup>100</sup>

Deterrence in its most fundamental form applies to the capacity of the state to preempt any threat. It is the capacity for change and influence, individual and collective, organisational and behavioural, that deterrence ideally seeks to

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<sup>100</sup>The capacity to minimise structural shifts in policy and intent is not intended to reflect inflexibility, rather it is to suggest the intent must be to avoid the need for ad hoc and ill-defined change that is more often in response to shifting political perceptions and changed expectations of requirements. If change does not embody the wider intent of controls or seek to compromise key security functions within the scope of the regulatory structures (through industry and economic pressures), then an erosion in the efficacy of the deterrence capacity is inevitable. The example that best illustrates this are those concessions imposed in the application and capacity of the Customs Act in terms of the annulment of the ability for retrospectivity and the erosions in the regulation of defence and dual-use goods.

influence. Quite simply, it is the idea of propelling an organisation towards a 'no' outcome. For widest effect, measures should seek to have as much of a psychological character to them as a technical capacity to enforce compliance and apply controls throughout the activity spectrum. As a strategy, deterrence then depends as much on the accurate assessment and management of risk as it does on the context in which it is applied. That is, just as battle casualties depend on the field surgeon to apply a process of triage to prioritise critical effort, and thereby save lives, deterrence depends on managing risk to achieve any real outcome.

At the core of deterrence theory is the establishment of a 'state of mind', or more clearly a 'perception of will', both for the state and the non-state party. Yet the challenge will always be in not just articulating this within a suite of counter-measures, but in calibrating its effectiveness. The paradox is that while most measures are aimed at the more quantifiable aspects of CBR use, the covert and ephemeral nature of non-state activity is more often indistinguishable from legitimate research and trade as micro-proliferation or CBR development. As a consequence, the probability for error in the perception of the threat, as opposed to the actual threat levels, is potentially significant and increasingly probable.

It is the ability of the state party to be informed that underpins the efficacy of any preemptive capacity. The ability to provide for ubiquitous and pervasive controls throughout the spectrum of threats, is not just constrained by the impracticability of such measures, but also through funding and resource limitations. Drell, a United States analyst of CBR terrorism, applies the juxtaposition between the current CBR intelligence and collection processes against non-state actors and those applied against states during the Cold War. To provide a perspective to the significantly more complex and intensive considerations for targeting and collection against non-state organisations, Drell uses the comparison of efforts by the Western intelligence agencies against Soviet military capabilities.

... in terms of establishing the scope of the issue, during the Cold War, if one could determine the deployed Soviet

forces with uncertainties below the level of a tank army, it would still be acceptable for security purposes. The paradox now is that the unaccountability of even minute quantities of chemical or biological agent becomes both significant and a potential threat to national security.<sup>101</sup>

Though both events would likely result in significantly different outcomes, the comparison highlights not just the difference in the nature and capacities of the threat, but the potential divergence in information, resource and intelligence collection paradigms between state and non-state parties. These uncertainties and difficulties in understanding, and in being informed of threats, predicate all other counter-measures. Being more efficient and effective against asymmetric threats, however, is not simply an exercise in throwing more resources and funding at the problem in the simplistic expectation that it will reduce the risk. It is as much about understanding the nature of the dynamics and dimensions of the threat from proliferants, as it is in collecting intelligence against non-state organisations.

Horizontal and vertical proliferation present unique challenges in the development of efficacious regulatory controls. The capacity throughout the current range of international and national non-proliferation and counter-proliferation measures to cause change and influence behaviour, which is ultimately the precursor to any actual use, is minimal. This is even more so when considered in the context of the potential and escalating capabilities many of the non-state organisations may already have. The predominant focus of international and national non-proliferation efforts on the regulation of industrial and state scale quantities, thresholds, ratios, volumes and the consumption of CBR materials, rather than efforts aimed at non-state micro-proliferation and use, is absolutely clear. Yet, not surprisingly, the leap of faith made in assuming these measures can be applied to the control of micro-proliferation by non-state activities, is counter-productive at best, and pernicious to national security at

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<sup>101</sup> S. D. Drell, A. D. Sofaer, G. D. Wilson, *The New Terror: Facing the Threat of Biological and Chemical Weapons*, Hoover Institution Press, Stanford, 1999, p 154.

worst.<sup>102</sup> While there are clear areas of mutual benefit where many of the similar materials and services are swept up within the same regulatory requirements, to attempt to achieve increased control over non-state actors through the application of state regulatory processes, is to rely on a process of risk taking. This is particularly so when the threats may involve discrete horizontal, vertical or indeed soft proliferation, which has proven more often unrecognisable, even when disaggregated or compared to most normal research and trade activity.

The current utility of safeguards, whether national or international, that can be applied to the regulation of non-state activity and the control of CBR capabilities are at a disjuncture with the potential of these weapons. The wide ranging and non-specific nature of international norms means that if greater enforcement measures are to be exercised at the micro-regulatory level, then they will more likely only be achieved within a national framework. But as it stands, the Australian national regulatory environment exists within a loose cocktail of controls that most often do not function as designed, lack the necessary enforcement mechanisms and are not calibrated against a credible assessment of risk. Despite established handling, transport, storage, sale and punitive measures throughout the range of extant controls, most activity continues to occur within a self regulatory or unregulated environment and is predicated on the expectation that people will ultimately 'do the right thing'. Commercial and economic interests, and indeed changing societal values, provide less certainty than ever before. This predilection towards the status quo provides no assurance that individuals and corporations will act or behave responsibly.

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<sup>102</sup> One of the better examples of this applies to the Chemical Weapons Convention where there has been considerable discussion from the Convention's first inception on its application and utility in the regulation of non-state chemical weapon development, acquisition and use. While the responsibility for prosecution is deferred by the Office of Prohibition of Chemical Warfare in the Hague to state parties and their respective adoption of national legislation, the systemic flaw remains that the Convention is neither structured or capable of being applied to non-state actors in all but the most unique of circumstances. Article X of the Convention is the main component that is claimed provides actions against non-state activities, yet the section is primarily aimed at assistance and protection against chemical weapons. Article X, it is averred, provides for a state party to take whatever measures are necessary to protect itself against the use of chemical weapons, yet to apply an apt metaphor, it remains a 'long bow to draw' to suggest a correlation between protection and the ability to effectively enforce and prosecute non-state activities. Personal communication Dr J. Pascal Zanders, Stockholm Peace Research Institute, 6 December 2000.

There can be little doubt that the catastrophic events resulting from the 11 September 2001 terrorist attacks against the United States have heightened Australia's perception of its own vulnerability. Yet how far the impetus and wave of anxiety from this attack, or indeed the prospect of future attacks, will compel effective and balanced change within the Australian security environment, is still unclear. The balance between heightened security and increased vulnerability, however, regardless of the intent of any new reform measures, is still likely to be at odds with the actual regulatory requirement. That is, the issue of threat, vulnerability and risk, and the need for national regulatory reform, currently lack any harmonisation.

Coming into a changing age of increasing non-state lethality, the societal fabric that underlies the application of law and social order within an Australian legislative environment is sharply divided. On one side are personal freedoms and on the other, a need for an increased and heightened security environment. But to apply a pragmatism that suggests there are two simple choices in considerations of security is to exclude a wide range of existing and potential measures that can be applied between these two polarised environments. More often perceptions of the negative impact on trade, research and civil rights are unfounded or excessively biased towards commercial and industry interests. The fact remains that regulatory structures and deterrence processes that reduce, detect, enforce and respond, are already established throughout industry and government, yet their potential is more often unrealised or simply not applied to the control of CBR and WMD capabilities. Considerations and concerns of issues such as proprietary rights, intellectual licensing and information management, are not insurmountable. The application of educative practices and policy, a legislative mandate and an industry and government consultative approach can overcome many of the concerns, yet still achieve wide ranging and strengthened change.

Despite variations in the philosophical application of non-proliferation and counter-proliferation measures in Australia, particularly when compared to the United States, United Kingdom and Canada, the differences are best calibrated in terms of the similar outcomes, that is, the consistent view across all the state

parties of the frustrations and lack of preemption in efforts to counter WMD threats. While the assertion by the Australian Government that Australia leads the world in both initiatives to implement counter-proliferation and the legislation to enforce national measures may be believed, if the current system still remains inadequate against the changed threat environment then the point is somewhat irrelevant. It is the impetus for change and in ensuring that there are enduring and effective counter-measures, rather than those hastily imposed from the last crisis, that is currently lacking within the Australian regulatory landscape. Despite a clear requirement, too often the impetus for reform and improvement will only be induced through a national disaster or tragedy.

The most frustrating aspect in the analysis of Australia's regulatory controls is that most of the necessary measures that would allow it to adopt more efficient and effective controls of WMD capabilities already exist. It is only as a result of the viscosity within the Commonwealth and jurisdictional government structures, the inhibitions in the political will of the Commonwealth and a lack of a clearly articulated national strategy that the adoption of improved WMD regulatory norms has been retarded. There are many potential benefits to be derived from increased security requirements, which may include increased activity in specific trading sectors, greater functional bureaucracy, increased safety, security, public confidence and significantly, greater efficiency and effectiveness in the compliance by Australia in its international monitoring and reporting. Extending controls beyond mechanical and bureaucratic practices to strengthened barrier and exclusion processes, increased monitoring, surveillance and reporting, combined with improved intelligence collection and enforcement capabilities through targeted legislation, all endogenous to a comprehensive national strategy, is the ideal. The reality, however, is that current measures and controls are weak, lack uniformity, provide few security assurances and contribute to the pretence of a secure national regulatory environment. The statement in 2001 by the Director General of the Office of the Prohibition of Chemical Weapons, most aptly summarises these points in stating,

[we] need to rethink past practices and attitudes. What may have been sufficient only a few months ago is not adequate in the present situation.<sup>103</sup>

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<sup>103</sup> J. M. Bustani, Office of the Prohibition of Chemical Weapons Press Release 31/2001, The Hague, 13 December 2001, (accessed 14 December 2001), <http://opcw.nl/>.