行政院所屬各機關因公出國人員出國報告書

（出國類別：考察　　）

稽查實務與環保犯罪預防之澳洲考察

服務機關：行政院環境保護署

出國人　職　　稱：薦派技正

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出國地點：澳大利亞

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報告日期：九十三年三月一日

目　錄

壹、前言

鑒於世界各國對環保法令愈趨嚴格，惟國內事業機構仍常因講求利潤優先情形下，以各種手段逃避稽查，甚至任意棄置、掩理廢棄物之不法案件時有所聞，為能於第一時間捉緝元兇，防杜及解決污染問題，負責環境保護污染源稽查取締之人員，在稽查取締技巧及能力上，實有需要學習國外之技術與資料。故行政院環境保護署環境督察總隊中區環境督察大隊於九十二年度特編列「稽查實務與環保犯罪預防之國外考察」經費，並選定位南半球有「大自然活地理教室」美譽之澳大利亞，作為訪察地點。然惜因訪察僅編列七天行程，時間相當短絀，因此，本考察計畫特再選定位南澳新南威爾斯州(NEW SOUTH WALES)之主要大城雪梨市(Sydney)及距約一小時飛機行程(四小時車程)之澳洲首都特別行政區坎培拉市(Canberra)，作為主要考察訪問之目的地。

貳、考察行程：

十二月十日　(星期三)：起程香港轉機至澳洲雪梨國際機場

十二月十一日(星期四)：抵達雪梨拜會環保局蒐集廢棄物管理等有關法令資料

十二月十二日(星期五)：拜會雪梨環保局人員及參訪雪梨環境污染稽查事宜

十二月十三日(星期六)：資料整理

十二月十四日(星期日)：資料整理及起程前往坎培拉

十二月十五日(星期一)：參訪坎培拉市國會大廈瞭解有關環境保護法令立法程序

十二月十六日(星期二)：坎培拉至雪梨國際機場搭機返國

參、考察訪問內容與檢討心得：

一、澳洲政府於一九九五年修正通過廢棄物減量及管理法(類似我國之廢棄物清理法)，建立明確之廢棄物清理業者之執照與管理制度，其中並對廢棄物生產、管理執照及相關防治條文於一九九七年另立成環境作業保護法(操作法)，明確的界定誰應該取得環保執照，及廢棄物的分野與名詞解釋等，其中重要的內容如下：

(一)無須執照的廢棄物管理。

(二)一般廢棄物管理。

(三)有害廢棄物管理。

檢討：澳洲政府對廢棄物訂有嚴格分界無須執照即得以清理廢棄物清理工作，使得小型的生產及清除業者得以免除執照制度，惟仍需作成營運紀錄。相較國內無分大小型業者均列入管理，可能衍生許多管理執行不易的問題，尤其對於剛成立的小型業者，對廢棄物清理即可能發生問題，如何能輔導及管理兼俱，著重環境風險評估，避免過嚴的管理以致問題反而叢生，也許澳洲法令值得探討。

二、澳洲對廢棄物減量及管理法重要的內容包括有：推動企業溫和而有效的減廢方案、成立推動減廢工作的廢棄物計劃及管理基金、制定政府推動及採購減廢及環保商品方案。據此，如何減廢可能才是澳洲政府的工作核心，其次是重複利用及再利用，最後才為廢棄物處理。

檢討：澳洲訂立的廢棄物政策十分有利於減廢工作者，尤其當減至某一數量以下時，包括生產者及清理者，即使是關係有害廢棄物的也可以免去執照的取得。本項法令立法精神及作法十分先進大膽。在配合良好的守法觀念、嚴格的法令執行、及澳洲廣大的土地作為緩衝，澳洲人發現成果算相當良好。反觀我國並無此法令規範與機制，這除有待教育宣導提昇國人的守法精神至一定程度後，先就大型特定事業別，擬訂示範之減廢方案，容許業者有減少管理壓力的誘因，業者必然會為了降低各級環保單位之「環保管理稽查干擾」而力行減廢工作，或許可以為國內生存不易的產業開創一個較為舒坦的空間。

三、澳洲政府對廢棄物執照制度，規範所有的廢棄物行為都應該取得執照，其中製造及貯存的例外包括下列：

(一)生產或貯存有良好包裝的受污染土壤、廢油及安定的石綿廢棄物者。

(二)於混凝土拌合廠內生產或貯存有害或非有害廢棄物者。

(三)政府及民間業者每年有害或無害廢棄物發生數量未及十噸，貯存數量未及二噸者。

(四)醫院及傳染病實驗室每年廢棄物生產量未及二噸，貯存數量未及五百公斤者。

檢討：國內對管理事業單位廢棄物之清理，在立法規範上與澳洲有類似之處。澳洲政府對清理廢棄物執照例外許可制度，使得許多小型的廢棄物活動可以免去執照的約束，其中特別對於

水泥廠有較大的寬容度，研判係為鼓勵水泥產業參與廢棄物代處理的動機。我國法令對這方面並無明確的規定，但是執行上則是相當的類似，許多小型生產或製造業者並不需要執照，但是在數量及強度上顯著的大型業者是否應取得廢棄物排放執照，建立所謂的產業廢棄物執照制度，或可以作為國內立法參考。

四、澳洲政府對廢棄物清理機構需要取得執照，但是根據廢棄物性質與數量，及處理廠所在地是否為環境敏感區等，仍得以有例外包括下列：

(一)場內單一處理生產煤炭所發生的煤渣及礦渣。

(二)使用煤渣或礦渣於路基填方。

(三)屠宰場內處理自己生產的廢棄物。

(四)採礦場處理廢礦渣。

(五)發電場處理灰渣。

(六)專一處理廢礦渣及廢煤渣的處理廠。

(七)每年僅處理煤渣數量未及二萬噸的掩埋場。

(八)都會地區垃圾掩埋場。

(九)以土方作用為主的，每年進場數量未及二萬噸的掩埋場。

(十)都會區內垃圾掩埋場每年收受五千噸以上固體廢棄物，或二萬噸以上的各種廢棄物，或二萬噸以上的煤渣者，應取得執照。

(十一)有害廢棄物掩埋場必須取得執照，除了民營僅掩埋石綿者，或公營僅掩埋石綿、廢油脂及醫療廢棄物者。

(十二)離都會活動位址距離小於二百五十公尺的掩埋場必須取得執照，但僅提供收取低於每年兩萬噸煤渣或二百噸廢棄物者、農業廢棄物掩埋場為例外。

(十三)廢輪胎清理場必須取得執照，但每年處理數量不及五千噸，及貯存量不足五十噸者為例外。

(十四)一般及有害廢棄物處理廠必須取得執照，唯僅處理都市污水及沼氣，廠內自行處理及取得下水道排放許可者為例外。

(十五)資源回收廠量能低於每年三萬噸者。

(十六)醫療焚化爐處理量每年小於廿五噸者及一般焚化爐處理量小於每小時一公噸者。

檢討：澳洲把不需取得廢棄物清理執照的業者規範的十分清楚，其中特別排除採礦衍生的項目，尤其中小型的資源回收業者，皆可以免去執照，大大減少管理成本。國內採用登記制，因為土地利用問題以致許多資源回收業場無法正式取得許可，澳洲因為土地廣大，因此並沒有這方面的問題，但其把免執照的業者詳細規範的方法，值得國內參考學習。

五、澳洲政府法令對於廢棄物清理的責任問題，生產者必須以許可聯單追蹤廢棄物進入處理廠，其清理工作必須以先向主管機構取得清理許可號碼方可進行，因此每一批廢棄物之行止均有一特定的號碼代表，除了可以作為追蹤之外，如果不符這項規定以致廢棄物非法棄置，生產及清除業者都必須負起責任，其最大的處罰金額為對公司廿五萬澳幣及對個人十二萬澳幣。

檢討：國內廢棄物管理已經有上網申報制度，但無廢棄物認證試別

卡代碼，這可能在發生廢棄物任意棄置後，追查產源事主不易，而可能發生主要因素包括於事業主及清理業者無守法精神貪圖不法利益，清理過程不明確，廢棄物分類太多，處理廠處理能力不足等等，以致部分廢棄物之處置產生混水摸魚的現象，造成取締困難及劣幣驅良幣的結果，且現行處理廠許可已可經由地方決定核發，雖然環境保護必須生根，由基層地方做起，但是，在全民意識未若成熟之時，仍有相當的疑慮，倘以澳洲方案，國內可在適宜時機建立處理廠標準，其中所謂之標準係指設備與技術及檢驗的標準，以求對不同的廢棄物應採用的處理或回收方式作明確的規定，爾後政府可主動透過國際技術交流，將必要的技術轉移給民間，同時在某些較不成熟為市場的少量或難處理廢棄物，以保護環境的最高原則，政府有關目的主管機關(廢棄物產源)可以考量給予處理廠補助或合作，以減少其經營的成本及風險，同時可以避免其它許多不當事情的發生。致於違犯廢棄物清理法的處分部分，澳洲政府廢棄物清理法中規範行政罰處分罰款相較之於我國則嚴格許多，罰款金額甚高，但其刑法則寬鬆許多，尤其對於稽查取締時，倘於短期內尚無法認定污染行為，或稽查蒐證無明確事證時，均無刑責規定，另澳洲政府對違法者之罰款絕對依法嚴格辦理，這對國內追討罰款率不高情形，可能有相當大的差別。

六、澳洲政府法令對於不需要執照的廢棄物生產及貯存業者訂有規

範，其內容與我國採用者相若，但有不同之處是許可碼的取得仍然是必要手續，除非事先已經訂好清理合約，而且生產業者仍然需要確認廢棄物到達合格的處理廠，尤其當清運數量到達200 公斤以上時，必須再確認受委託清運者為合格之業者。最終之處理廠也必須在收受廢棄物時，進行必要的內容確認工作，並且備妥相關資料提供主管單位查詢。但仍有下列行為可以免除許可碼而以填表方式取代。

(一)該廢棄物為易腐敗或醫療廢棄物。

(二)生產業者與清除業者訂定有合約並依政府規定手續辦理者。

檢討：澳洲法令對於不需要執照的管理訂有規定，此項為我國所無。有關許可號碼之廣泛採用，澳洲政府似乎以此管制非契約型廢棄物，以避免廢棄物隨意請他人傾棄而造成環境問題。有關本項許可碼的利用或許可以配合採納在國內工程及臨時性排放廢棄物行為之上，以促減少廢棄物之不當排放，尤其在稽查重要的廢棄物清理行為時，更可以利用許可碼而迅速的查獲廢棄物的來源及性質，減少不明廢棄物發生的機會，對於減少稽核正確的時間頗為有利。

七、有關清運業者的管理，除了與國內採用的管理方式相同以外，澳洲法令主要著重於廢棄物的分離，尤其是有害廢棄物不得與一般廢棄物共同清除，而資源回收用之廢棄物也不可與其它廢

棄物相互摻雜。

檢討：國內廢棄物之清運，已明訂有害事業廢棄物不得與一般事業廢棄物合併貯存清理，然倘事業違反規定，而於稽查時發現一大堆廢棄物，部分可能屬有害廢棄物時，因採樣作業並未明確，除可能造成採樣結果可信度遭人質疑外，另因在許多時候，常因實務經驗不足，對一時難辨或屬不同範疇之廢棄物，尤其當有害與一般介於分界之間，倘廢棄物之採樣作業未明確規範下，致稽查時確可能發生困擾情形。故對廢棄物執行嚴格的分類確有助於管理與稽核，如何促進業者做好分類工作，避免各種不利的混合發生，或可參考國外法令及作法。

八、有關清理資料的保存期限，澳洲法令訂有明確的規定以三年為限，期限較短的原因可能肇致於編碼問題，每批次廢棄物均有特定之文件編碼，三年中必定累積相當多的資料，因為執法與稽查落實，所以文件的保存並不需要長久。

檢討：國內對廢棄物之清理資料亦已訂明確之保存年限(有害達五年)，惟因多數業者未能注意，或於記載時未與實況相符，致稽查常能查有違反廢棄物清理法案例，且倘業者以未紀錄為由，或提供資料塗改造假，以掩飾不當的行為，確實會對稽查追查廢棄物之流向時造成困擾。過去亦曾有處理業者因圖謀非法利益，任意棄置、掩埋有害事業廢棄物，事後於稽查時並發現業者資料有未紀錄、不完整，或遺失而有利於違法者逃脫情事，而為加強佐證，及為防杜或稽查蒐證所需，

亦曾以採用非常之駐廠方式，以期解決不當處理廢棄物問題，惟該方式明顯對執行稽查取締工作變得相當吃力。有鑑於此，國內雖然已經成立事業廢棄物管制中心，並已開始以衛星立位追蹤掌握廢棄物流向，惟倘或能參考國外方式，要求廢棄物於清理時，申請文件編號、保存期限，透過每批次廢棄物品的編號與傳遞之間的簽記，以達到保障合法與防患非法的目的，對稽核工作的落實將會更有助益。

九、澳洲政府法令對於液態與固態廢棄物作了明確的分野，固態廢棄物外形顯露角度必須大於五度以上，同時在六十度以下之貯存及運送過程不能有流動的現象，特別的是必須能用鏟子剷起為原則。本法令的規定以適用於澳洲把廢棄物分成固態、液態及氣態等三大類，因應各種不同的廢棄物之不同的處理方式，包括各型一般廢棄物，澳洲政府均區分並明列處理辦法規範之，因此，所有的排放幾乎都列入廢棄物管理的範疇。其特徵為工業廢棄物除了石綿及放射性、有害廢棄物以外，多項落入一般固體廢棄物的範疇，亦即澳洲政府容許一般廢棄物與非特殊工業廢棄物共同處理。

檢討：國內對廢棄物之屬性管理，仍尚有部分係於稽查時未能立即判定者。另因事業廢棄物定義尚有屬公告認定之，即廢棄物性狀尚有未能以條列式文字規範者，所以，在事業廢棄物與一般廢棄物之間仍常有模糊或過度的地帶，以致於稽查時，因未能立即判定廢棄物範疇，造成與業者間對屬事業廢棄物或一般廢棄物發生認知上之疑義。另又如過去國內垃圾焚化

爐即不收受事業廢棄物，甚至部分掩埋場也不受理，致因當事業廢棄物之處理廠於在國內未能大量設置，處理量能不足時，以致發生窘境。雖然目前鑑於焚化爐垃圾量不足問題，已有更弦易轍之舉作混合收費處理。然而依國外經驗，公告特定項目之有害廢棄物亦也視為一般廢棄物，共同回收或處理方式，亦或許對於促進資源之有效再利用與減少稽查工作負擔，會有另一種不一樣之成效。

十、澳洲法令對於有害廢棄物的判定，採用的方式與國內相同，但是增加了醫療用尖銳及生物易腐敗兩項，其考量為避免個人操作或傷害所致。而比較特殊的是判定有害廢棄物的方法，雖然也是利用 TCLP 法，但是標準有三種界限為鈍態、固態及工業標準，超過工業標準才叫做有害廢棄物，其二是澳洲增加了總量管制，並與 TCLP 法相若的訂定三種界限，其目的為減少因為檢體內含有多量會產生干擾的鹼性物質所致。

檢討：國內尚無將易腐敗物質列入有害廢棄物規範，惟就過去大型禽畜傳染病發生時，採焚化或掩埋處理的經驗，若未處理得宜，結果會與有害廢棄物不當處置相似，唯此類廢棄物並未經常發生，所以可以引用特案辦理。

十一、澳洲法令在醫療廢棄物的管理上採用更嚴格的分類法，所以，醫院產出的廢棄物可以根據法令分類，分類為一般及感染性廢棄物，其中感染性廢棄物又區分出包括放射性、化學或細胞毒性、化學物質的第二種類等，並規定其間不能互相混合。澳洲法令亦容許醫院將其感染性廢棄物依據衛生機關

訂定的方法消毒滅菌成為一般廢棄物，但是尖銳物品仍得要特別處理。為了協助偏遠地區醫療院所處理其感染性廢棄物，澳洲政府同意非雪梨地區的一般掩埋場可以受理其廢棄物，但一次以四十公斤為限，同時必須申報登記並覆土掩埋，但前提是內容物不得有肢體內臟等。

檢討：過去因國內醫療廢棄物處理量能不足，且或因民族地域性觀念使然，致感染性醫療廢棄物處理問題一直是醫院的困擾，而稽查管制工作因限於種種因素，未能全程跟車，以致亦曾發生代清理業者未妥善焚化處理感染性醫療廢棄物，而係以非法掩埋方式處理，造成環境污染問題。另於稽查代處理廠時亦發現焚化廠常有「血水淋漓」的現象出現，如果國內能推動醫廢消毒滅菌標準方法，鼓勵院內處理，其次則要強調廢棄物的包裝材質厚度，以避免塑膠袋在運送過程當中破裂造成二次污染，將使稽查管制工作更有效率。

十二、澳洲對廢棄物處理推動資源回收的法案，主要係以鼓勵業者提出再利用標準，如果該標準下可以是有利益，且不妨害環境者，經過政府的審核即可進行再利用。對於污水處理廠排放水的再利用，澳洲政府似乎很鼓勵其利用在肥份方面，可能原因為澳洲許多地方缺水，排放水如經查所含有害物質在標準以內，當然取之用於補助灌溉為當。

檢討：國內推動再利用工作已經多年，但仍有許多處理廠介於再利用與處理之間，尤其是在傳統行業別上，因此，常模糊了規範，造成稽查工作的困難。例如熔煉業、塑膠加工業、皮革

製品加工業等，又如，高濃度金屬污泥以送交回收廠為宜，低濃度金屬污泥以送交處理廠為宜，但是兩者在國內經常的混雜，以致影響回收與處理效果，問題除了生產者未分類以外，數量未及經濟規模也是重要原因，當回收廠透過市場收到難以回收處理或再利用的物品時，因為高處理成本的影響，就可能會採違法棄置、掩埋方式處分；甚致稽查案例亦曾查有疑涉偷渡輸出違反廢棄物清理法之案件，且因涉廢棄物清理刑責規範問題，造成稽查上許多之困擾。

肆、結語：

一、澳洲因為土地廣大，所以在廢棄物的處理上擁有許多優點，同時，因為澳洲礦產豐富，礦冶技術優良，因此，在有害廢棄物的處理上游有餘仞，甚致鼓勵民間業者從事代處理國外有害事業廢棄物，相對於國內在這方面條件與技術相差許多，然而工欲善其事必先利其器，我國的廢棄物處理及回收技術必須再精良，為了要能讓國內處理業生根，必須先強化國內的技術能力與資金的提供，以利培養具備處理中心能力的業者，這方面政府與民間必須共同努力，否則，以目前國內規模甚小的代清除機構四處林立情況，甚有某單一縣市代清除業者即高達二百餘家；又倘代處理能力有疑問之處理廠亦充斥其間，則難保廢棄物能有妥善的處理結果，而末端之稽查取締管制工作，將更加困難。

二、澳洲工業以中大型居多，因此，稽查工作較經濟而完整，國內以中小型企業居多，限於業者廢棄物經營的成本，許多管制工

作無法全部落實，加以國人守法觀念較差，造成稽查取締時，常遇阻礙，污染案件層出不窮，或許可參考國外經驗採用集體管制，亦即一區域內的工業廢棄物統合由區內某一機構負責，尤其是工業區管理中心應該負起這個責任，無法配合及違法者才是稽核工作的重點。其次，可以加強回收項目的開放與推動，令多數量小而且對環境衝擊不大的廢棄物可以經由回收重生(建築廢棄物)。增加業者的利基，業者自然會去遵循，而且廢棄物送抵回收廠後就已經達到集中管制的目的，效益遠高於分散的管制。其後再強化回收廠的再利用能力，爾後無法回收者應處理物品也可以在集中達到容易管制的效果，如此，必然可以節省許多管制人力與物力。

三、澳洲稽查工作主要以核准碼為起始，每樣受核准的清運處理行為均有編號，所以在廠內可以很容易的查核物源。國內已採用相類似的方法，並已成立了事業廢棄管制中心，公告要求一定規模以上之代清除業者之清除機具需裝置衛星定位儀，以管監控廢棄物清理流向，惟因尚未全面要求業者實施，以致許多廢棄物在運出之後，仍有可能成為漏網之魚，未被妥善處理。對此，或可參考國外方式透過於清理前申請清理編號，並於廢棄物包裝外貼上編定之條碼，透過電腦聯線可以很容易的判定廠內外廢棄物的許可內容及去處，以減少不當棄置問題的發生。

四、澳洲的不明廢棄物稽查，因為土地廣大所以就地處置甚為容易，影響不大。土壤污染在澳洲也不成問題，其採用的方法是更替客土而已。因應環境的不同，澳洲的稽核重點主要在處理

廠上。同時因為澳洲基礎工業良好，所以推動工業內解決的回收再利用方案工作甚有成效，大部分的工業廢棄物可以走進回收一途。

伍、附錄：

一、ENVIRONMENTAL GUIDELINES: ASSESSMENT、CLASSIFICATION AND MANAGEMENT OF LIQUID AND NON-LIQUID WASTES EPA NSW

(一)INTRODUCTION

(二)THE LICENSING SCHEME

(三)CLASSIFYING WASTES

(四)MANAGING CLASSIFIED WASTE

(五)COMMON QUESTIONS AND ANSWERS

SECTION 1 INTRODUCTION

1.1 Background

The *Waste Minimisation and Management Act 1995* (the Waste Act) introduced a State-wide scheme for licensing waste activities. According to this scheme, the wastes that pose the greatest threat to the environment need a licence. The purpose of the licence is to ensure that appropriate controls apply to the handling, storage, treatment and disposal of the waste. There must also be a clear public record of what wastes are going where. Sometimes this is needed even where a licence is not required, so that the community can be confident that our wastes are well managed, and so that there is a way of tracing illegally dumped waste.

The Waste Minimisation and Management Regulation 1996 detailed State-wide licensing requirements, standard environment protection requirements and waste reporting obligations.

The waste licensing and offence provisions of the Waste Act have (now) been transferred into the *Protection of the Environment Operations Act 1997* (the Operations Act), which will commence on 1 July 1999. It is important to know that it is now Schedule 1 of the Operations Act that:

1. defines who is required to hold an *environment protection licence;* and
2. defines the different types of waste and other terms used in the Act relating to waste.

The Protection of the Environment Operations (Waste) Regulation 1996 (Waste Regulation), made under the Operations Act, now contains:

- general environmental obligations for waste activities (generators and storers), waste facilities (landfills) and waste transporters that are non-licensed
- provisions relating to the collection of waste contributions pursuant to Section 88 of the Operations Act (formerly Section 72 contributions under the Waste Act)
- special provisions relating to matters such as contaminant immobilisation approvals, the management of asbestos waste and the management of clinical waste.

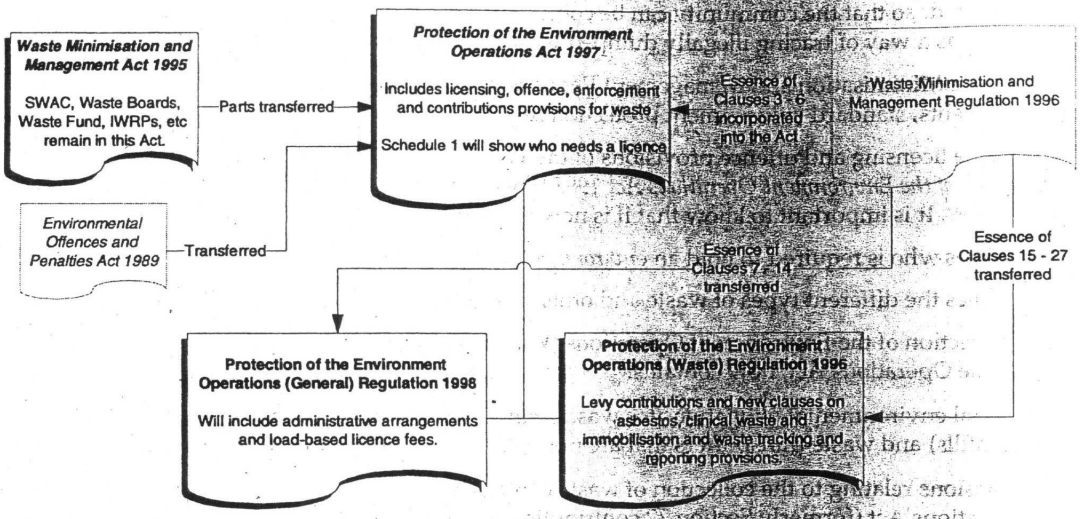
The regulatory scheme set down in the Operations Act complements the provisions of the *Waste Minimisation and Management Act 1995* and associated reforms, which include:

- a target for reducing waste going to disposal by 60% by 2000
- a waste management hierarchy, within which waste avoidance is a priority, followed by reuse and recycling/reprocessing, with disposal as a last resort
- industry waste reduction plans to ensure that nominated industries make tangible and effective waste reduction commitments
- operation of the State Waste Advisory Council to advise the Minister for the Environment and the EPA on aspects of the implementation of waste reforms in NSW
- operation of Regional Waste Boards to maintain and implement comprehensive regional waste management plans
- a Waste Planning and Management Fund to support NSW waste reduction initiatives
- comprehensive plans of action for key waste streams (such as green waste and building and demolition waste)

- ongoing State-wide community education, promoting waste avoidance and reduction options
- requirements for government agencies to produce waste reduction and purchasing plans.

The relationship between the *Protection of the Environment Operations Act 1997* and its new regulations and the *Waste Minimisation and Management Act 1995* is summarised in the diagram below:

Waste Provisions under the *Protection of the Environment Operations Act 1997*



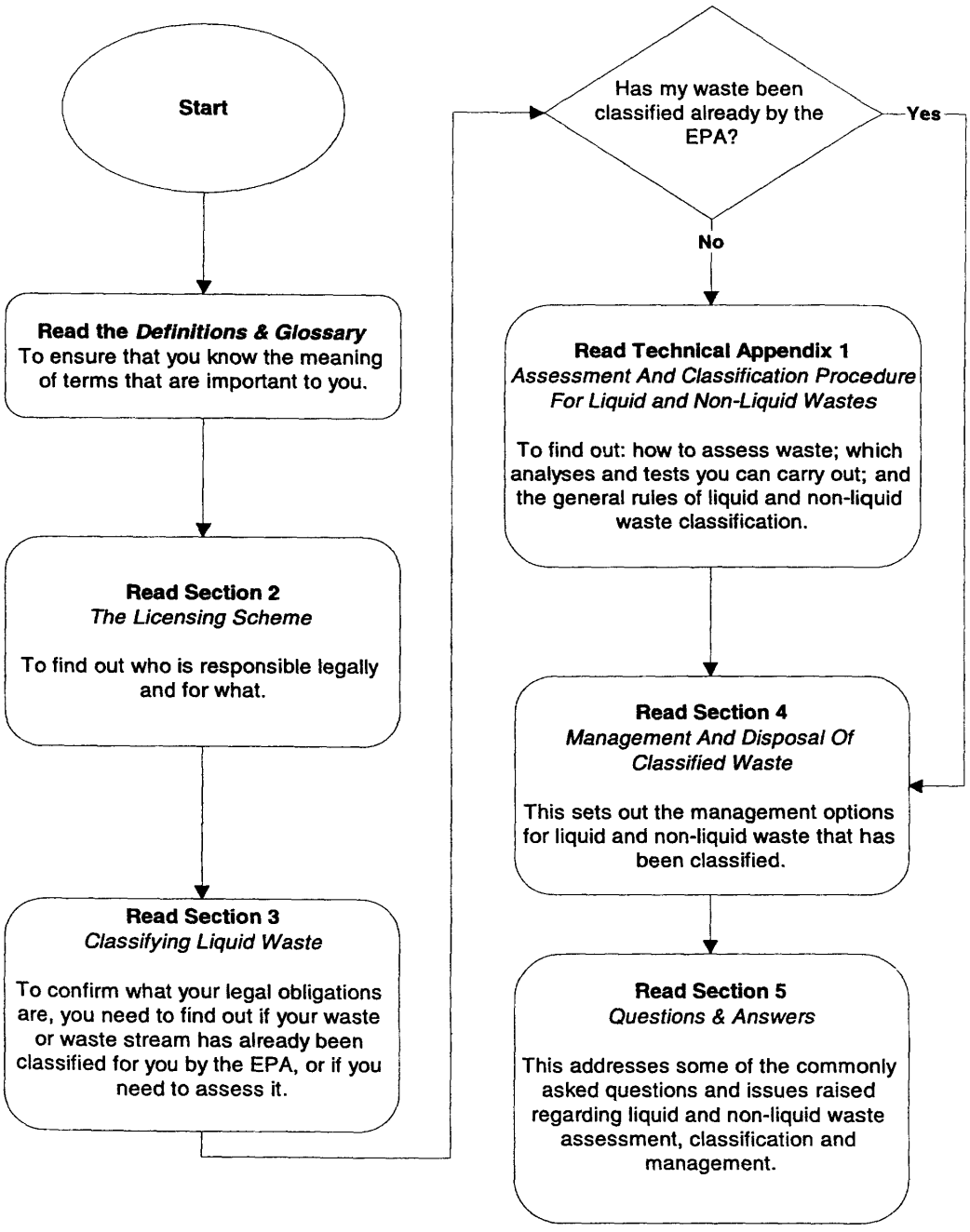
1.2 Structure of these guidelines

The figure opposite shows you how to use these guidelines. They are structured as follows:

Section 2:

- Defines those people generating, storing, transporting, treating, processing, reprocessing or disposing of waste who need a licence.
- Outlines the obligations of those who need a licence.
- Sets out the general environmental obligations of those who do not need a licence.

How do I use this document?



Section 3:

- Guides those generating, storing and handling wastes in assessing these wastes to determine whether the liquid waste they are handling is regarded as hazardous, Group A, Group B, Group C or non-controlled aqueous liquid and whether the 'solid'/'non-liquid' waste they are handling is inert, solid, industrial or hazardous. This will enable them to determine whether a licence is required and what their associated environmental management obligations are.
- Outlines the two main ways of classifying liquid and non-liquid wastes.
- Outlines two different assessment processes—one for liquid waste and the other for non-liquid waste. This is supported by more detailed technical advice in Technical Appendix 1.

Section 4:

- Explains the rules that are set out in the Waste Regulation for the management of liquid and non-liquid wastes once they are classified.
- Discusses good management practices for liquid and non-liquid wastes. In particular, there are rules relating to the disposal of liquid and non-liquid wastes and the constraints on sending particular sorts of wastes to particular sorts of landfills.

Section 5:

- Deals with the common questions and answers about classifying and managing different wastes
- Draws out some of the implicit and explicit issues/linkages between the various aspects of waste regulation
- Discusses links between waste regulation and other aspects of environmental regulation.

Definitions and glossary:

- Provides a guide to unfamiliar terms.
- Lists EPA contacts for further information.

SECTION 2 THE LICENSING SCHEME

This section discusses the regulatory provisions made under the *Protection of the Environment Operations Act 1997* in simplified terms. Readers should also consult the actual text of these provisions, reproduced in Technical Appendix 9 of these guidelines.

2.1 Who needs a licence?

The need for a licence will depend on the sort of waste being handled, the volume of that waste and what is being done with it. Schedule 1 of the *Protection of the Environment Operations Act 1997* (the Operations Act) sets out the criteria for whether you need to hold an *environment protection licence.*

In general the following facilities or activities must be licensed unless they are specifically exempted (see Sections 2.1.1 to 2.1.4 for more details):

- those who **generate or store** hazardous, industrial or Group A waste (*waste activities*)
- **transporters** of hazardous, industrial, Group A, Group B or Group C waste or tyres (*waste transporters*)
- facilities that **treat, process, reprocess or dispose of** hazardous, industrial, Group A or Group B waste, or facilities that store or dispose of tyres (*waste facilities*)
- **landfill sites** (*waste facilities*)
- **mobile plants** that treat, process or reprocess industrial, hazardous or Group A wastes (*mobile waste processors*).

The waste classification scheme is outlined in section 3.

2.1.1 Waste activities: generators and storers

People who generate and/or store hazardous waste, industrial waste or Group A waste require an environment protection licence.

Some activities are exempt from this requirement because they are either small in scale or easy to manage with little risk. The exemptions are:

- the generating or on-site storage of contaminated soil, recyclable oil or stabilised asbestos waste in bonded matrix
- the generating or on-site storage of hazardous waste, industrial waste or Group A waste in or at a concrete batching plant
- the generating of not more than 10 tonnes per year, or the on-site storage of less than 2 tonnes at any one time, of hazardous waste, industrial waste or Group A waste by any of the following:

  —local authorities

  —dry cleaners

  —printers

  —photographic and processing laboratories

  —pharmacies

  —hairdressers

—businesses carrying out any skin penetration procedure to which Part 3 of the Public Health Regulation 1991 applies

—veterinary surgeons

—nursing homes

—funeral parlours

—painters

—builders

—machinery and vehicle repair and servicing workshops

—panel beaters

—jewellers

—educational institutions

—hotels, clubs, restaurants and related hospitality industries

- the generating of not more than 2 tonnes per year, or the on-site storage of less than 500 kg at any one time, of hazardous waste, industrial waste or Group A waste by any of the following:

  —dental or doctors surgeries

  —hospitals, pathology laboratories or pre-term clinics

  —farming operations

  —landscaping or fire-hazard-reduction works (such as those carried out by local and public authorities)

- the generating of not more than 10 tonnes per year, or the on-site storage of less than 2 tonnes at any one time, of hazardous waste, industrial waste or Group A waste in the form of oil, paint, lacquer, varnish, resin, ink, dye, pigments, adhesives, hydrocarbons or emulsions.

2.1.2 Transport of waste

You will require an environment protection licence if you transport:

- hazardous waste, industrial waste, Group A waste, Group B waste or Group C waste for fee or reward in quantities of more than 200 kg per load, or
- used, rejected or unwanted tyres (including shredded tyres and tyre pieces) in loads over 2 tonnes.

The following persons or activities are excluded from this licensing requirement:

- persons who transport waste in their capacity as employees
- any waste that is transported in connection with an emergency situation or an accident
- transporting only stabilised asbestos in bonded matrix.

2.1.3 Waste facilities: treatment, processing, reprocessing and landfill sites

Waste facilities

Factors that determine whether a waste facility licence is required include: the nature of the waste received; the annual quantity of waste received; and, in the case of landfills, whether the landfill is inside or outside an area comprising the Sydney metropolitan area and the Extended Regulated Area, or located within an environmentally sensitive area.

For the purpose of determining whether a waste facility requires a licence, *virgin excavated natural material, non-hazardous bulk agricultural or crop waste that is not putrescible* and *effluent* are not regarded as 'waste'. These materials therefore do not need to be considered when you are deciding whether a waste facility licence is needed.

The following premises do *not* require a waste facility licence:

- premises where the only type of waste disposed of is coal washery rejects or slags generated on those premises
- premises where only coal washery rejects or slags are used solely for the purposes of road or railway construction
- premises where the only type of waste disposed of is biosolids generated on those premises
- premises where organic waste (and no other type of waste) is applied for agricultural or environmental rehabilitation purposes
- mines (as referred to in Schedule 1 of the POEO Act), where the only waste disposed of is tailings, waste rock or inert waste generated on the mine
- electricity generating works (as referred to in Schedule 1 of the POEO Act), where the only waste disposed of is ash generated from the works
- other premises (referred to in Schedule 1 of the POEO Act), which are used solely for the purposes of disposing of any of the following types of waste:

  —non-hazardous tailings or waste rock generated on or at any mine, or

  —non-hazardous ash generated from any electricity-generating works.

Landfill sites within the Sydney metropolitan area or Extended Regulated Area

All landfill sites in the Sydney metropolitan area, or in the local government areas of Cessnock, Gosford, Kiama, Lake Macquarie, Maitland, Newcastle, Port Stephens, Shellharbour, Shoalhaven, Wingecarribee, Wollongong and Wyong must be licensed unless they fit one of the following categories:

- landfills that receive only coal washery rejects or slags at a rate of not more than 20,000 tonnes per year, or
- landfills that are situated on residential premises, or on land used principally for farming operations, and which only dispose of waste generated on those premises, or
- landfills that receive no more than 20,000 tonnes of inert waste only, over any period of time, and only if the disposal of the waste is incidental or ancillary to the land being used for a purpose other than as a landfill site (for example, for the construction of buildings or roads or other similar types of infrastructure development).

Rural landfill sites which are *not* in 'environmentally sensitive areas'

Rural landfills (that is the ones outside the Sydney metropolitan area, or in the local government areas of Cessnock, Gosford, Kiama, Lake Macquarie, Maitland, Newcastle, Port Stephens, Shellharbour, Shoalhaven, Wingecarribee, Wollongong and Wyong) will require a licence if they receive:

- over 5000 tonnes per year of solid waste or solid waste and inert waste
- over 20,000 tonnes per year of any waste
- over 20,000 tonnes per year of coal washery rejects or slags (or both)

- any amount of hazardous waste, industrial waste, Group A waste and Group B waste for disposal except the following:

  —where the only hazardous, industrial, Group A or Group B waste that is disposed of is asbestos waste, or

  —where the landfills are operated by a local authority and where the only hazardous, industrial, Group A or Group B waste that is disposed of is asbestos waste, liquid grease-trap waste or clinical waste.

Landfill sites in 'environmentally sensitive areas'

Landfill sites in 'environmentally sensitive areas' (listed in Technical Appendix 8 of these guidelines) will also need to be licensed, except in the following cases:

- landfills that are within an environmentally sensitive area by reason only of being located within 250 metres of a residential zone or of a dwelling, school or hospital not associated with the landfill site, *and* that:

  —receive only coal washery rejects or slags at a rate of not more than 20,000 tonnes per year, or

  —were in operation as at 30 June 1997 and receive no more than 200 tonnes of waste per year

- landfills that are situated on residential premises, or on land used principally for farming operations, and that dispose of only waste generated on those premises.

Used tyre treatment, processing, storage and disposal

Facilities that treat, process or dispose of tyres require a licence if:

- they treat, process or dispose of more than 5000 tonnes per year of tyres (including shredded tyres and tyre pieces)
- they store more than 50 tonnes of tyres at any one time (including shredded tyres and tyre pieces).

Waste treatment, processing, reprocessing and disposal

Facilities that treat, process, reprocess or dispose of any amount of hazardous waste, industrial waste, Group A waste and Group B waste require an environment protection licence, with the following exceptions:

- facilities that only treat, process or reprocess sewage, or gases specified as Dangerous Goods Class 2 in the 6th edition of the *Australian Code for the Transport of Dangerous Goods by Road and Rail*, in force as at 1 January 1998, or
- facilities that only treat, process or reprocess waste that is generated on site, or
- facilities that only lawfully discharge waste into a sewer.

Waste storage, transfer or recovery

- Facilities that store or transfer any waste, or that recover (by separating or processing) any waste in quantities exceeding 30,000 tonnes per year, require an environment protection licence.
- Facilities that store any amount of hazardous waste, industrial waste or Group A waste require an environment protection licence, with some exceptions. (See Section 2.1.1 above.)

Waste incinerators

The requirement for persons operating incinerators to hold an environment protection licence depend on the type and quantity of waste involved. The following will require a licence:

- facilities incinerating any quantity of chemical waste
- facilities incinerating any quantity of cytotoxic waste
- facilities incinerating more than 25 tonnes per year of clinical waste
- facilities incinerating more than 25 tonnes per year of quarantine waste
- facilities incinerating more than 1 tonne per hour of any other type of waste.

2.1.4 Mobile waste processing

Mobile waste processors who treat, process or reprocess hazardous waste, industrial waste or Group A in any quantities require an environment protection licence.

The definition of **mobile plant** in Schedule 1 Part 2 of the *Protection of the Environment Operations Act 1997* is as follows: any equipment or machinery that:

(a) is capable of carrying on any one or more of the activities referred to in this Schedule, and

(b) is capable of moving under its own motive power or of being transported, and

(c) is operated at a particular site on a temporary basis only (that is, for a total period of not more than 6 months in any 12-month period at that site).

Note that a non-premises-based activity that is carried on by mobile plant will revert to being a premises-based activity for licensing purposes if the mobile plant is operated at the particular site for a total period of more than 6 months in any 12-month period.

'Mobile waste processing', which is a mobile-plant scheduled activity, is defined as being 'the treatment, processing or reprocessing of hazardous waste, industrial waste or Group A waste (or any combination of those types of waste) by mobile plant and that is carried on for business or commercial purposes'.

The advantage of holding a non-premises-based licence for mobile waste processing is that persons who operate such 'mobile' equipment (that is, equipment that stays at any one site for a total period of not more than 6 months in any 12-month period) will need to hold only one licence regardless of where they operate, rather than each premises where the mobile plant operates needing to hold a licence.

2.2 Who is responsible for what under the licensing scheme?

Understanding and working within a licensing scheme relies on generators, transporters, treatment and disposal operators and mobile waste processors being able to clearly identify their wastes. It also relies on everyone understanding their responsibilities and accountabilities for properly identifying and managing wastes.

2.2.1 Generators

The primary responsibility of the generator (and in some cases the storer) is to classify the waste properly (irrespective of whether it is going to be disposed of or reprocessed), to use a licensed transporter (where the waste to be transported is industrial waste, hazardous waste, Group A waste, Group B waste or Group C waste), and to ensure that the wastes are taken to suitable mobile waste processors or waste facilities. If the waste is hazardous waste, industrial waste or Group A waste, the generator must also obtain a consignment authorisation number from a waste facility or mobile waste processor for waste that is to be transported from the premises, complete an approved waste data form about the consigned waste, and provide copies to the transporter.

2.2.2 Transporters

All transporters must be aware of what sort of waste is being carried. This is crucial so they know whether a licence is required to transport the waste, and so the waste can be transported to a suitable mobile waste processor or waste treatment, processing or reprocessing facility. If the waste is hazardous waste, industrial waste or Group A waste, the transporter must carry, with each load, duly completed waste data forms about the consigned waste, and must provide a copy of each to the waste facility or mobile waste processor to which the load is delivered.

It is an offence under Section 143 'Unlawful transporting of waste' in the Operations Act if a person transports waste to a place that cannot lawfully be used as a waste facility for that waste. Both the transporter and the owner of the waste (if not the same) may be guilty of an offence in the event of unlawful disposal. The maximum penalty is $250,000 for a corporation or $120,000 for an individual.

2.2.3 Waste treatment or reprocessing facilities

Waste treatment, processing or reprocessing facilities must know the types and quantities of the waste they receive and the characteristics of the site where the facility is located. If a licence is needed it will specify what sorts of wastes can be received, and while the primary responsibility for assessing and classifying the wastes rests with the generator, the facility must have a system for screening and recording wastes received to ensure that it handles only those wastes it is licensed to take. If the waste is hazardous waste, industrial waste or Group A waste, operators must ensure that they receive duly completed waste data forms about each load of waste received from transporters, and verify that each has a valid consignment authorisation number issued by the waste facility.

2.2.4 Mobile waste processors

Mobile waste processors are responsible for knowing the type and quantity of waste they receive, assessing and classifying any waste residues they generate, and obtaining a licence from the EPA. Licences for mobile waste processors will give details of the sorts of wastes that can be received for treatment, processing or reprocessing.

While the primary responsibility for assessing and classifying the wastes rests with the generator, the operator must have a system for screening and recording wastes received to ensure that it handles only those wastes it is licensed to take. Operators must ensure that they receive duly completed waste data forms about each load of waste received from transporters, and verify that each has a valid consignment authorisation number issued by the mobile waste processor.

2.3 Requirements for activities and facilities that do not have to be licensed

There are standard environment protection and reporting requirements for certain unlicensed operations; these are set out in the Protection of the Environment (Waste) Regulation 1996.

Clauses 16 and 17 of this Regulation allow for persons or bodies other than the EPA (for example, local councils and waste boards) to be 'approved' (empowered) to require information to be provided by non-licensed waste generators and/or transporters concerning the generation, storage, transporting, treatment or disposal of waste under their control.

2.3.1 Non-licensed hazardous, industrial or Group A waste generating or storage activities

Persons who generate hazardous waste, industrial waste or Group A waste for business or other commercial purposes and who are not required to hold a licence under the Act are specified in the regulation as a 'non-licensed waste activities'. Clause 16 of the Waste Regulation applies to any such 'non-licensed waste activity'.

These activities must comply with the following environment protection standards to ensure that they do not harm the environment:

- the waste must be stored in an environmentally safe manner
- the waste must not be stored, or come into contact with, any incompatible waste
- the EPA (or such other person or body as may be approved) must be provided with such information as it may require concerning the generation, storage, treatment or disposal of the waste, and such information must be retained for a period of at least three years from when it was provided
- if the waste is transported from the premises the waste generator must do the following (except if they use an 'authorised contractor'):

  —obtain a consignment authorisation number for the waste from the waste facility or mobile waste processor to whom the waste is to be delivered, and

  —complete, to the required extent, an approved waste data form in relation to the consigned waste, and give a copy of the form to the person transporting the waste,

  —ensure that the waste data form is completed accurately, is retained for a period of not less than three years from the time the form was completed, and is made available for inspection by an authorised officer on request
- if the waste transported from the premises is over 200 kg in quantity, the waste generator must ensure that the transporter is licensed
- if the waste is transported from the premises to an interstate location and the waste is 'controlled waste' within the meaning of the *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure*, made under the *National Environment Protection Council Act 1994* of the Commonwealth on 26 June 1998, the waste generator must comply with the requirements of that Measure

  if the waste is transported from the premises, the waste generator must ensure that the waste is transported:

  —to a waste facility that is licensed under the Act, or

  —to a person carrying on mobile waste processing that is licensed under the Act, or

—to a place that can otherwise lawfully be used as a waste facility for that waste

- if the waste is transported from the premises, the waste generator must accurately identify the waste (including identification in accordance with the relevant description set out in Technical Appendix 4 of these guidelines) and advise the transporter accordingly
- the waste generator must inform the EPA (or such other person or body as may be approved for the purposes of this clause) of any suspected breach of the Act or this Regulation in connection with the transportation of the waste from the premises.

There are some exemptions from complying with the requirements of obtaining a 'consignment authorisation number' and completing an 'approved data form', noted above. The exemptions apply in cases where:

- the waste is asbestos waste or clinical waste (excluding recognisable body parts), or
- the waste generator has entered into a written agreement with an 'authorised contractor' (see definition below) for the transportation of the waste from the premises, in which case the waste generator must do the following before the waste is transported from the premises:
  - —make a record of the name, address and licence number of the authorised contractor
  - —retain that record and a copy of the agreement for a period of at least three years from the date the agreement was made
  - —make the record and copy of the agreement available for inspection by an authorised officer on request
  - —accurately identify the waste, and advise the authorised contractor accordingly for each load
  - —inform the EPA (or such other person or body as may be approved) if the waste generator does not, within 21 days of the waste being collected by the authorised contractor, receive a receipt from the authorised contractor detailing the name and address of the person to whom the waste was delivered
  - —keep each receipt that is received for a period of at least three years from the date of the collection of the waste for each load
  - —make all such receipts available for inspection by an authorised officer on request.

An **authorised contractor** means a person who:

- is licensed under the Act to transport waste, and
- is specifically authorised under that licence:
  - —to transport waste from premises on which non-licensed waste activities are carried on, and
  - —to perform the requirements of obtaining a 'consignment authorisation number' and completing an 'approved data form', noted above, on behalf of the non-licensed waste activity.

2.3.2 Non-licensed hazardous, industrial, Group A, Group B or Group C waste transporters

Persons who transport industrial, hazardous, Group A, Group B or Group C wastes for fee or gain and who are not required to hold a licence under the Act are specified in the regulation as a 'non-licensed waste transporters'. Clause 17 of the Waste Regulation applies to any such 'non-licensed waste transporters'.

Requirements relating to non-licensed waste transporters in Clause 17 are:

- any vehicle used to transport waste must:

—be kept in a clean condition, and

—be constructed and maintained so as to prevent spillage of waste

any container used to transport waste must be safely secured on the vehicle carrying the container

- any vehicle used to transport waste must be covered when loaded so as to prevent spillage and loss of waste and the emission of odours
- incompatible wastes must not be mixed or transported together on any vehicle used to transport waste
- any hazardous waste or industrial waste transported must not be mixed with any other type of waste or with any other material
- any material segregated for recycling that is transported must not be mixed with other waste
- if any hazardous waste, industrial waste or Group A waste (not being asbestos waste or clinical waste, but including recognisable body parts) is transported, the transporter must:

  —obtain a copy of the waste data form from the occupier of the premises from which the waste is being transported (being the approved waste data form required under the occupier's licence or by the Waste Regulation and that has been completed by the occupier to the required extent)

  —ensure that a copy of the form is kept in the vehicle transporting the waste while it is being transported

  —complete the waste data form to the required extent

  —give a copy of the form to the occupier of the waste facility, or the operator of the mobile plant, to which the waste is transported

  —retain a copy of the form for a period of not less than three years from the time the form was completed

  any waste transported must be transported:

  —to a waste facility that is licensed under the Act, or

  —to a person carrying on mobile waste processing that is licensed under the Act, or

  —to a place that can otherwise lawfully be used as a waste facility for that waste

  the occupier of the waste facility—or the operator of the mobile plant—to which the waste is transported must be advised of the type of waste before it is unloaded

  the transporter must provide the EPA (or such other person or body as may be approved) with such information as they may require in relation to the transportation of waste, and such information must be retained by the transporter for a period of at least three years from the time it was provided

  the transporter must inform the EPA (or such other person or body as may be approved) of any suspected breach of the Act or this Regulation in connection with the transportation of waste by the transporter.

3.3 Non-licensed landfills

Clause 15 of the Waste Regulation requires all occupiers of non-licensed landfills to report the following information to the EPA:

the location of the landfill site

- the name and address of the occupier of the landfill site.

The above requirements do not apply to landfills that receive only virgin excavated natural material, or to landfills where the disposal of waste is not for business or other commercial purposes.

The EPA can also ask unlicensed landfills for other information in a specified form; the landfill is obliged to provide this information.

SECTION 3 CLASSIFYING WASTES

3.1 Differentiating non-liquid and liquid wastes

All waste is classified into one of three categories: non-liquid, liquid or gaseous.

For waste to be considered *non-liquid* it must meet **all** of the following requirements:

- it has an angle of repose of greater than five degrees (5°)
- it has no free liquids when tested in accordance with the USEPA Paint Filter Liquids Test—Method 9095 (USEPA 1986)
- it liberates no free liquids when transported
- it does not become free flowing at or below 60°C or when transported
- it is spadeable.

All other waste that is not gaseous is considered to be *liquid waste.*

3.2 Classifications of non-liquid and liquid wastes in the Operations Act

The classifications of *inert waste, solid waste* and *industrial waste* apply only to non-liquid wastes.

The classification of *hazardous waste* can apply to both to liquid and non-liquid wastes.

The classifications of Group A, Group B and Group C waste apply only to liquid wastes. In other words:

Types of liquid waste:

- hazardous
- Group A
- Group B
- Group C
- non-controlled aqueous liquid

Types of non-liquid waste:

- hazardous
- industrial
- solid
- inert

Table 1 lists wastes that are already classified by the EPA as inert.

Table 2 lists wastes that are already classified by the EPA as solid.

Table 3 lists wastes that are already classified by the EPA as industrial.

Table 4 lists wastes that are already classified by the EPA as hazardous.

Table 5 lists Group A, Group B and Group C wastes.

Note that the non-liquid wastes listed in Tables 1, 2, 3 and 4, and the liquid wastes listed in Tables 4 and 5 (with the exception of controlled aqueous liquid wastes), do not have to be assessed according to the methods described in Technical Appendix 1.

A liquid classified in Group B or C will not be classified as Group A unless that liquid is contaminated with other waste(s). For example, liquid grease-trap wastes where, in some cases, the percentage of grease exceeds 20% of the total liquids will always be Group B. On the other hand, if the liquid grease-trap waste is contaminated with, say, chemicals, solvents or mineral oils, then it may be classified as Group A.

Table 1: Non-liquid waste types that are classified in Schedule 1 Part 3 of the Operations Act as inert waste

Waste type or stream
'Virgin excavated natural material (eg clay, gravel, sand, soil and rock) that is not mixed with any other waste and that: (a) has been excavated from areas that are not contaminated, as a result of industrial, commercial, mining or agricultural activities, with manufactured chemicals and that does not contain sulphidic ores or soils, or (b) consists of excavated natural materials that meet such criteria as may be approved by the EPA.'
'Building and demolition waste (eg bricks, concrete, paper, plastics, glass, metal and timber[1]), being material resulting from the demolition, erection, construction, refurbishment or alteration of buildings or from the construction, repair or alteration of infrastructure-type development such as roads, bridges, dams, tunnels, railways and airports, and which: (a) is not mixed with any other type of waste, and (b) does not contain any asbestos waste.'
'Asphalt waste (eg resulting from road construction and water proofing works).'
'Biosolids categorised as Unrestricted Use, or as Restricted Use 1, in accordance with the criteria set out in the Biosolids Guidelines.'
'Used, rejected or unwanted tyres (including shredded tyres or tyre pieces).'
'Office and packaging waste (eg paper, plastics, glass, metal and timber) that is not mixed with any other type of waste.'
Note: 1. Includes treated timber such as copper chrome arsenate (CCA), high temperature creosote (HTC), pigmented emulsified creosote (PEC) and light organic solvent preservative (LSOP) treated timber.

Table 2: Non-liquid waste types that are classified in Schedule 1 Part 3 of the Operations Act as solid waste
Waste type or stream
'Municipal waste, being waste consisting of: (a) household domestic waste that is set aside for kerb side collection or delivered by the householder directly to a waste facility, or (b) other types of domestic waste (eg domestic clean-up and residential garden waste), or (c) local council generated waste (eg waste from street sweeping, litter bins and parks).'
'Biosolids categorised as Restricted Use 2 or 3 in accordance with the criteria set out in the Biosolids Guidelines, manure and night soil.'
'Waste contaminated with lead from residential premises or educational or child care institutions.'
'Cleaned pesticide, biocide, herbicide or fungicide containers.' [1]
'Drained and mechanically crushed oil filters, and rags and oil absorbent materials (not containing free liquids) from automotive workshops.'
'Disposable nappies, incontinence pads and sanitary napkins.'
'Food waste.'
'Vegetative waste generated from agriculture or horticulture.'
'Non-chemical waste generated from manufacturing and services (including metal, timber, paper, ceramics, plastics, thermosets and composites).'
Note: 1. The cleaning method used should be as good as or better than the triple-rinsing method developed by AVCARE and reproduced in Technical Appendix 3.

Table 3: Non-liquid waste types that are classified in Schedule 1 Part 3 of the Operations Act as industrial waste
Waste type or stream
'Stabilised asbestos waste in bonded matrix.'
'Asbestos fibre and dust waste (eg waste resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material, and dust from ventilation collection systems).'
'Any non-liquid radioactive waste that: (a) contains a substance that emits ionising radiation spontaneously, and (b) has a specific activity ratio or a total activity ratio (as determined in accordance with the procedures set out in the Waste Guidelines [these guidelines]) that is greater than one.'

Table 4: Non-liquid and liquid waste types that are classified in Schedule 1 Part 3 of the Operations Act as hazardous
Waste type or stream
'Any waste that meets the criteria for assessment as dangerous goods under the *Australian Code for the Transport of Dangerous Goods by Road and Rail*, and categorised as one of the following: (a) explosives, (b) gases (compressed, liquefied or dissolved under pressure), (c) flammable solids (excluding organic waste, and all physical forms of carbon such as activated carbon and graphite), (d) flammable liquids, (e) substances liable to spontaneous combustion (excluding organic waste, and all physical forms of carbon such as activated carbon and graphite), (f) substances which in contact with water emit flammable gases, (g) oxidising agents and organic peroxides, (h) toxic substances, (i) corrosive substances.'
'Pharmaceuticals and poisons (being waste generated by activities carried out for business or other commercial purposes and that consists of pharmaceutical or other chemical substances specified in the Poisons List under the *Poisons and Therapeutic Goods Act 1966*).'
'Clinical waste.'
'Cytotoxic waste.'
'Sharps waste.'
'Any radioactive waste, being waste that: (a) contains a substance that emits ionising radiation spontaneously, and (b) has a specific activity greater than 100 becquerels per gram, and (c) consists of, or contains more than the prescribed activity of any radioactive element listed in Schedule 1 to the Radiation Control Regulation 1993.'
'Any liquid radioactive waste, being waste that: (a) contains a substance that emits ionising radiation spontaneously, and (b) has a specific activity ratio or a total activity ratio (as determined in accordance with the procedures set out in the Waste Guidelines [these guidelines]) that is greater than one.'
'Any declared chemical waste that: (a) is the subject of a chemical control order under the *Environmentally Hazardous Chemicals Act 1985*, and (b) is not permitted to be disposed of to a landfill site because of such an order.'
'Quarantine waste.'

Table 5: Liquid waste types that are classified in Schedule 1 Part 3 of the Operations Act

Hazardous waste:	**'Group A waste:**	**'Group B waste:**	**'Group C waste:**
Wastes (liquid) that are classified as hazardous (as reproduced in Table 4 of these guidelines).	(a) Non-aqueous liquid waste[1]. (b) Controlled aqueous liquid waste[2].'	(a) Liquid food waste[1]. (b) Liquid grease-trap waste resulting from the preparation or manufacturing of food.'	Liquid waste from human waste storage facilities or waste treatment devices[1] (within the meaning of the Waste Guidelines [these guidelines]), including pump-out waste and septage.'

Notes:

1. For definitions of these terms see: Definitions and Glossary.
2. See Section 3.3 below and Part 4 of Technical Appendix 1.

3.3 Classifying and assessing liquid wastes

3.3.1 Introduction

Liquids that cannot be lawfully discharged directly into waters and cannot be or are not discharged to the sewer may be **subject to licensing under the Operations Act.**

Legislation dealing with discharges to sewer include the *Water Board (Corporatisation) Act 1994, Hunter Water Board (Corporatisation) Act 1990,* Section 68 of the *Local Government Act 1993* and section 43 (4)(b) of the Local Government (Water, Sewerage and Drainage) Regulation 1993.

Summary of classification options

Once it is clear that a waste is liquid, it needs to be classified in order to establish how it is allowed to be managed under the Operations Act and whether a licence is required.

There are two possible approaches to classifying liquid wastes:

Scenario 1: The liquid waste is clearly listed in Schedule 1 Part 3 of the Operations Act as hazardous waste (Table 4), or in Group A, Group B or Group C (Table 5), and an immediate decision can be made about storage, treatment, reprocessing or disposal, based on the regulations.

Scenario 2: The liquid waste is not listed in Table 4 or Table 5 and must be assessed.

If the waste is assessed as a *controlled aqueous liquid waste,* it is classified as a Group A waste and a licence is required for waste generators, storers, transporters, mobile waste processors or waste facilities

If the waste is assessed as a *non-controlled aqueous liquid waste,* a licence is usually not required.

Liquid wastes can range from almost true liquids to wastes that contain significant quantities of solids and only just miss out on being classified as *non-liquid* (perhaps because they contain some free liquids or fail to pass the 5° minimum angle of repose requirement). Where possible, such wastes should be separated into liquid and non-liquid fractions, and each component should be assessed, classified and managed separately according to the relevant provisions in these guidelines.

To help waste generators to classify their liquid wastes, the following five distinct groupings may be useful:

1. Water containing larger quantities of filtrable and/or non-filtrable solids.

   This grouping is most likely to be *non-controlled aqueous liquids*, which are usually not subject to licensing as waste activities or waste facilities under the Operations Act. Examples are dredge spoil, mine tailings, inert power station ash slurries and other slurries, provided that none of them is contaminated with suspended or dissolved chemicals to an extent that would lead them to be assessed as *controlled aqueous liquid wastes*. (See Section 3.3.) Water separated from such liquids (after the settlement of solids) can usually be discharged into the environment, and this is often carried on according to the conditions of a licence under the Operations Act.

2. Water containing larger quantities of dissolved chemical substances.

   These need to be assessed and classified according to this Section and Technical Appendix 1 unless:

   - the mixture is already classified as hazardous according to Table 4, or
   - the mixture satisfies the definition of non-aqueous liquid waste and is therefore classified as Group A waste, or
   - the generator of the liquid waste decides (without testing) to obtain a licence and manage the waste as if it were a Group A waste.

3. Water containing larger quantities of nutrients.

   - Waste water satisfying the definition of **'effluent'**, which 'means:

     (a) waste water from sewage collection or treatment plants, or-

     (b) waste water from collection or treatment systems that are ancillary to processing industries involving livestock, agriculture, wood, paper or food, being waste water that is conveyed from the place of generation by means of a pipe, canal or other conventional method used in irrigation (but not by means of a tanker or truck), or

     (c) waste water from collection or treatment systems that are ancillary to intensive livestock, aquaculture or agricultural industries, being waste water that is released by means of a pipe, canal or other conventional method used in irrigation as part of day-to-day farming operations.'

   is not considered as a 'waste' when determining whether a 'waste facility' licence is required for the irrigation (disposal to land) of these liquids. (See Section 2.1.3.)

   In circumstances where the same liquids in (b) and (c) above do not satisfy the definition of effluent (because they are not directly irrigated), the information provided below should be considered.

- Other types of nutrient-rich waste water that do not satisfy the definition of effluent are likely to be Group B (for example, liquid grease-trap wastes and liquid wastes from the food industry) or Group C wastes (for example, septage and pump-out wastes). (For details see Table 5.)

4. Non-aqueous liquids.

   These will belong to Group A liquid wastes. (See Table 5.) Examples are oils, solvents, and solvent-containing liquids such as **uncured** solvent-based coatings and paints.

5. Combinations of two or more of the above groupings.

   These also need to be assessed and classified according to this Section and Technical Appendix 1 unless:

   - the mixture is already classified as hazardous according to Table 4, or
   - the mixture satisfies the definition of non-aqueous liquid waste and is therefore classified as Group A waste, or
   - the generator of the liquid waste decides (without testing) to obtain a licence and manage the waste as if it were a Group A waste.

3.3.2 The liquid-waste-assessment process

In some cases the composition of a particular liquid waste may not be known, or the waste does not appear on the list of hazardous wastes (see Table 4) or Group A, Group B or Group C liquid wastes (see Table 5). In these cases, the waste generator will need to do a waste assessment to establish whether a licence is required. If a waste stream is of a fairly constant composition a one-off assessment to determine the characteristics and classification may be sufficient. If the waste stream is subject to variation (from one batch to another) an ongoing assessment program may be required.

Details about the assessment process are given in Technical Appendix 1, including:

- the steps to be taken in assessment
- sampling
- which contaminants to test for
- details of the tests to be applied.

The test used to assess the waste, the *Specific Contaminant Concentration (SCC)* test, is one that determines the concentration in mg/kg of each contaminant in the liquid-waste sample. The measure mg/kg, rather than mg/L, is used, since some liquid wastes can have significant quantities of solids present. The guidelines set different maximum levels for the concentration of individual contaminants; if these levels are exceeded for any contaminant, the waste will be assessed as *controlled aqueous liquid waste* and, therefore, classified as Group A liquid waste.

3.3.3 Rules for assessing and classifying liquid waste

The general rules set out below must be considered before assigning a final classification to the liquid waste:

- Liquid waste must be classified as one of the following categories: hazardous, Group A, Group B, Group C liquid waste or *non-controlled aqueous liquid waste*.
- Liquid waste classified as hazardous in Table 4 or as Group A, Group B or Group C waste in Table 5 cannot be reclassified as *non-controlled aqueous liquid waste* (using this assessment procedure), unless it has been treated to reduce or remove those characteristics that were responsible for the original classification.
- The person doing the assessment must decide which of the chemical contaminants listed in Table A1 are present in the liquid waste and assess each contaminant against the given criteria.
- If the liquid waste contains potentially toxic and/or ecotoxic contaminants not listed in Table A1, the person doing the assessment must ask the EPA to provide assessment criteria for these contaminants and assess the waste against these criteria as well.
- Even if only one out of many chemical contaminants present exceeds its respective criterion in Table A1, the liquid waste must be assessed as *controlled aqueous liquid waste* and, therefore, classified as Group A waste.
- Wastes that contain any natural or artificial substance that emits ionising radiation spontaneously must also be subjected to the classification procedure specified in Section 3.5.

See Technical Appendix 1 for a full description of the liquid-waste-assessment process.

3.4 Classifying and assessing non-liquid wastes

3.4.1 Introduction

For the generator (and in some cases the storer) of wastes there are two possible scenarios associated with identifying or classifying non-liquid wastes.

Scenario 1: The waste is clearly listed in Schedule 1 Part 3 of the Operations Act as inert, solid, industrial or hazardous and an immediate decision can be made about storage, treatment, reprocessing or disposal.

Scenario 2: The waste is not listed in Schedule 1 Part 3 of the Operations Act, and there is a need to assess it to identify its components so that the appropriate management requirements can be determined.

After waste is disposed of to land, it can undergo environmentally significant (physical, chemical or biological) changes. As a result the following potential environmental impacts need to be considered and managed:

- the release of greenhouse gases such as methane and carbon dioxide
- the release of nutrient-rich liquid (leachate), which, if allowed to contaminate ground water or surface waters, can encourage the formation of environmentally harmful algal blooms
- the release of liquids (leachates) containing chemical contaminants such as heavy metals and human-made chemicals, which, if allowed to contaminate soil, ground water or surface waters, can have undesirable effects on the health of humans, animals, plants or other living organisms.

In line with the potential environmental impacts discussed above, non-liquid waste is classified in the following order, ranging from the least harmful to the most harmful to the environment:

- *inert*—this waste type is the least likely to undergo environmentally significant transformations; therefore, it should not release significant quantities of greenhouse gases or leachates contaminated with nutrients and/or chemicals

- *solid*—this waste type can include putrescible waste and is considered to pose a higher environmental risk than inert waste, and consequently needs to be managed with greater care
- *industrial*—this waste type can contain somewhat higher (four times) levels of the contaminants than solid waste, and needs to be managed with more stringent environmental controls than solid waste
- *hazardous*—this waste type contains contaminants at levels high enough to require treatment to render them safe before disposal.

3.4.2 The non-liquid assessment process

In some cases the composition of a particular non-liquid waste may not be known, or the waste will not appear on the lists of inert, solid, industrial or hazardous wastes in Schedule 1 of the Operations Act. (See Tables 1, 2, 3 and 4.) In these cases the waste generator will need to do a waste assessment. If a waste stream is of a fairly constant composition, a one-off assessment to determine the characteristics and classification may be sufficient. If the waste stream is subject to variation (from one batch to another) an ongoing assessment program may be required.

The classification process for non-liquids focuses on the potential for the waste to release chemical contaminants into the environment through contact with liquids (leachates). Details about the assessment process are given in Technical Appendix 1, including:

- the steps to be taken in assessment
- sampling
- which contaminants to test for
- details of the tests to be applied.

The principal test used for assessing non-liquid waste is the *Toxicity Characteristics Leaching Procedure (TCLP)*, which estimates the potential for the waste to release chemical contaminants into a leaching liquid. This property is called the *leachable concentration* in this document. The guidelines set different maximum levels for the *leachable concentration* of each contaminant in order for waste to be classified as *inert* (≤ TCLP1), *solid* (≤ TCLP2) and *industrial* (≤ TCLP3). If the level exceeds these the waste is classified as *hazardous*.

The standard pH for the leaching solutions used must be either 4.93 ± 0.05 if the pH of the waste sample is less than 5.0, or 2.88 ± 0.05 if the pH of the waste sample is greater than 5.0. In specific circumstances the EPA may permit the use of leachants of a pH other than those specified above. The EPA's written authorisation for using an alternative leachant must be sought in writing, with justification for the proposed variation. The testing of a non-putrescible waste type for disposal into a monofill or monocell that can be shown not to be subject to penetration by acidic leachate or ground water is an example of a situation in which such written authorisation may be granted by the EPA. (See Section 3.4.2 below.)

EPA approval may be obtained to use an alternative leachant for assessing and classifying waste for monocell or monofill disposal. To seek this approval, documentation must be provided to the EPA describing all alternative options to disposal that have been considered and the reasons for their rejection. For additional information on alternative management options for wastes such as industrial ash, dust, sludges or waste containing chemical contaminants refer to Sections 4.5 and 5.2. For contaminated soils refer to Section 5.2.

The second test used to complete the assessment of waste, the *Specific Contaminant Concentration (SCC)* test, is one that determines the *total concentration* of each contaminant in the waste sample. The guidelines set different maximum levels for the *total concentration* of each contaminant in order

for waste to be classified as *inert* (≤ SCC1), *solid* (≤ SCC2) and *industrial* (≤ SCC3). If the level exceeds SCC3 the waste is classified as *hazardous*.

The use of *total concentration (SCC)* limits is a precaution against a scenario where, in the presence of a high concentration of a contaminant, the TCLP test gives a low result because of interference by certain other non-permanent factors in the waste, such as high alkalinity. There is a potential for these non-permanent factors to change with time, resulting in a much greater release rate for such contaminants. (See also the discussion of *immobilisation* below.)

The *contaminant threshold (CT)* values used in Table A3 were calculated from the corresponding *leachable concentration (TCLP)* values by multiplying them by 20. This is because for every gram (g) of waste subjected to extraction in the TCLP test, 20 millilitres (mL) of leachant are used. This means that if 20 mg/kg of a contaminant is present in the waste and is completely leached out in the test, the TCLP test result will be 1 mg/L. Thus if the *total concentration* for a contaminant is less than or equal to a particular *contaminant threshold* (CT1, CT2 or CT3) limiting value, then it is certain that if the *leachable concentration* value were to be determined for that contaminant, it can be only less than or equal to the corresponding *leachable concentration* (TCLP1, TCLP2 or TCLP3) limiting value.

Both the TCLP and SCC criteria must be satisfied before a waste can be classified as *inert, solid* or *industrial* unless the *immobilisation* of each contaminant exceeding the *total concentration* limit (SCC1, SCC2 or SCC3) is approved by the EPA (see section 3.4.4).

3.4.3 Rules for assessing and classifying non-liquid waste

Table 6 summarises the criteria used in the waste assessment process. The general rules given below must be considered before assigning a final classification to the waste:

(a) Waste must be classified in one of the following categories in ascending order: inert, solid, industrial or hazardous waste.

(b) Waste classified as solid, industrial or hazardous in Tables 1, 2, 3 and 4 in Section 3.2 cannot be reclassified into a lower category using this procedure, unless it has been treated to reduce or remove its hazardous characteristics.

(c) Only waste meeting all of the criteria of *non-liquid* may be classified using this procedure.

(d) In addition to meeting other requirements set out in this section, waste classified as inert waste using this procedure must also satisfy the criteria of *not capable of environmentally significant physical, chemical or biological transformation.* (See Definitions and Glossary.)

(e) The person doing the assessment must decide which of the chemical contaminants listed in Tables A3 and A4 are present in the waste, and must then assess each contaminant against the given criteria.

(f) If the waste contains potentially toxic and/or ecotoxic contaminants not listed in Tables A3 and A4, the person doing the assessment must ask the EPA to provide assessment criteria for these contaminants and then must assess the waste against these criteria as well.

(g) The waste must be classified according to the highest category listed in (a) as a result of the assessment for all contaminants in (e) and (f); for example, if all but one of the contaminants meets the requirements for solid waste, and the final contaminant meets only the requirements of industrial waste, the waste must be classified as industrial waste.

(h) Wastes that contain any natural or artificial substance that emits ionising radiation spontaneously must also be subjected to the classification procedure specified in Section 3.5.

Table 6: Summary of criteria for chemical contaminants in waste classification

Waste classification[1]	Criteria[2] for classification (any of the alternative options given)	Comments
Inert	1. **SCC test values** ≤ CT1.	TCLP test not required.
	2. **TCLP test values** ≤ TCLP1 and **SCC test values** ≤ SCC1.	
	3. **TCLP test values** ≤ TCLP1 and **SCC test values** > SCC1 and immobilisation[3] is EPA-approved.	Without EPA approval of immobilisation, classify as solid, industrial or hazardous.
Solid	1. **SCC test values** ≤ CT2.	TCLP test not required.
	2. TCLP1 < **TCLP test values** ≤ TCLP2 and **SCC test values** ≤ SCC2.	
	3. TCLP1 < **TCLP test values** ≤ TCLP2 and **SCC test values** > SCC2 and the immobilisation[3] is EPA-approved.	Without EPA approval of immobilisation, classify as industrial or hazardous.
Industrial	1. **SCC test values** ≤ CT3.	TCLP test not required.
	2. TCLP2 < **TCLP test values** ≤ TCLP3 and **SCC test values** ≤ SCC3.	
	3. **TCLP test values** ≤ TCLP3 and SCC2 < **SCC test values** ≤ SCC3.	
	4. TCLP2 < **TCLP test values** ≤ TCLP3 and **SCC test values** > SCC3 and immobilisation[3] is EPA-approved.	Without EPA approval of immobilisation, classify as hazardous.
Hazardous	1. **TCLP test values** > TCLP3.	Store or treat waste as appropriate.
	2. **TCLP test values** ≤ TCLP3 and **SCC test values** > SCC3 and immobilisation is not EPA-approved.	Store or treat waste as appropriate.

Notes:

1. See also the general rules relating to waste classification (in Section 3.4.3) for other criteria that must be satisfied before the waste can be classified.
2. These criteria apply to each toxic and ecotoxic contaminant present in the waste. (See Tables A3 and A4.)
3. In certain cases the EPA will consider specific conditions, such as the segregation of such waste from all other types of waste in a monofill or a monocell, in order to achieve a greater margin of safety against a possible failure of the immobilisation in the future. Information about the construction and operation of a monofill/monocell is available in the *Draft Environmental Guidelines for Industrial Waste Landfilling*, (EPA 1998a).

[1] See Technical Appendix 1 for a full description of the non-liquid-waste-assessment process.

3.4.4 Immobilisation of chemical contaminants

The immobilisation of a contaminant in waste may be the result of a specific treatment process that the waste has been subjected to, or it may simply be a natural property of that type of waste. From a protection of the environment perspective, the key issue is whether this immobilisation (that is, resistance to being leached out of the waste) is likely to last in the long term.

It is critical that the immobilisation of the contaminant is sustained over time; otherwise the rate of release of the contaminant could exceed the rate at which the local environment can cope with it or safely mineralise it.

The EPA may approve the immobilisation of specified contaminant(s) contained in a particular type of waste. Approvals of the immobilisation of contaminants may be given in the following ways:

- the EPA can issue general approvals which would apply to all waste generated that has the properties specified in the approval, or
- for a specific waste as a result of an individual application received by the EPA.

In either case, an approval is subject to such conditions determined by the EPA, and remains in force until such time as it is revoked by the EPA.

Approvals of immobilisation may specify conditions relating to the subsequent storage, treatment or disposal of the waste. For example, in certain cases the EPA will consider specific conditions (such as the segregation of such waste from all other types of waste in a monofill or a monocell) in order to achieve a greater margin of safety against a possible failure of the immobilisation in the future. These conditions must not be contravened, otherwise a penalty may be imposed.

The following is the substance of the legal provisions in Clause 28 of the Waste Regulation in respect of 'Immobilisation of contaminants in waste':

- The EPA may approve the immobilisation of contaminants in waste by issuing a **general approval** or a **specific approval**. Such approvals have the effect of enabling the waste to which the approval relates to be assessed and classified in accordance with the procedures set out in Technical Appendix 1 of these guidelines.
- A general approval may be given by way of notice published in the Gazette. A specific approval may be given after an application is made to the EPA.
- An application for a specific approval must:
  - —be in the approved form
  - —be accompanied by such fee (if any) as the EPA may determine
  - —identify the contaminants to be immobilised
  - —be accompanied by such evidence as may be required by the EPA for the purposes of ascertaining whether the identified contaminants in the waste will be immobilised and will remain immobilised after disposal of the waste.
- The EPA may impose conditions to any approval, such as:
  - —disposal of the waste to which the approval relates
  - —notification of certain matters to the EPA
  - —record-keeping requirements
  - —the immobilisation of the contaminants concerned.

- In giving an approval, the EPA is required to identify a person (or class of persons) to whom the approval relates (the **responsible person**).
- A general approval may be amended or revoked by the EPA by notice published in the Gazette.
- A specific approval may be amended or revoked by the EPA by way of written notice given to the responsible person.
- If an approval is given, the responsible person must comply with the conditions to which the approval is subject; otherwise they will have committed an offence.

For details on how to make applications for specific approvals of immobilisation, as well as how to use general approvals that are already in place, see Technical Appendix 2.

Table A5 (on the last page of Technical Appendix 2) shows the waste types to which the EPA is already planning to grant general approval in respect of the immobilisation of specific contaminants; it also specifies the conditions relevant to each approval. If a waste is not covered by a general approval, an application for a specific approval has to be made to the EPA.

It is important to note that wherever EPA approval has been given for the immobilisation of the contaminant(s), the waste can be classified according to its TCLP test results alone. If the immobilisation of a contaminant for which TCLP limits are not specified in the guidelines is approved, the EPA will advise on the management options that are available for such materials.

3.5 Classification of wastes containing radioactive substances

Wastes containing any natural or artificial substance that emits ionising radiation spontaneously must be classified on the basis of both their radioactive and other characteristics, according to the stepwise procedure defined below:

1. The radioactivity of the waste must be assessed in accordance with the *Radiation Control Act 1990* and the Radiation Control Regulation 1993.
2. If the liquid or non-liquid waste has a specific activity greater than 100 becquerels per gram and consists of or contains more than the prescribed activity of any radioactive element listed in Schedule 1 of the Radiation Control Regulation 1993, whether natural or artificial, it must be classified as *hazardous waste*.
3. If the liquid or non-liquid waste has a specific activity of 100 becquerels per gram or less and/or consists of or contains equal to or less than the prescribed activity of any radioactive element listed in Schedule 1 of the Radiation Control Regulation 1993, whether natural or artificial, then the *total activity ratio* and the *specific activity ratio* must be calculated according to the mathematical expressions given below:

The **total activity ratio** is calculated using the expression:

$$\text{Total activity ratio} = (A1 \times 10^{-3}) + (A2 \times 10^{-4}) + (A3 \times 10^{-5}) + (A4 \times 10^{-6})$$

where A1 to A4 are the total activity of Group 1 to Group 4 radionuclides, as set out in Column 1 of Schedule 1 of the Radiation Control Regulation 1993.

The **specific activity ratio** is calculated using the expression:

Specific activity ratio = SA1 + (SA2 x 10^{-1}) + (SA3 x 10^{-2}) + (SA4 x 10^{-3})

where SA1 to SA4 are the specific activity (of the material) of Group 1 to Group 4 radionuclides, as set out in Column 1 of Schedule 1 of the Radiation Control Regulation 1993.

Specific activity is defined in the *Code of Practice for the Safe Transport of Radioactive Materials, 1990,* which is referenced in clause 23 of the *Radiation Control Act 1990. Specific activity* of a radionuclide means the activity per unit mass of that nuclide. The specific activity of a material shall mean the activity per unit mass or volume of the material in which the radionuclides are essentially uniformly distributed.

The *total activity* of a material means the activity of the whole of the material in which the radionuclides are essentially uniformly distributed (determined using 1-kilogram representative samples of the whole material).

4. If the specific activity ratio, or total activity ratio, is greater than one, then the waste must be classified as follows:

   Liquid wastes must be classified as *hazardous waste.*

   Non-liquid wastes must be classified as *industrial waste* **unless** other characteristics of the waste mean that it must be classified as *hazardous waste* (for example, it may be classified as *hazardous waste* because it matches another one of the hazardous waste types or streams in Table 4, or it may contain chemical contaminants that will lead to its assessment as *hazardous waste* according to the chemical assessment procedure in Part 5 of Technical Appendix 1).

5. If the *specific activity ratio* and *total activity ratio* are equal to or less than one, then the waste must be classified as follows:

   Liquid wastes must be classified according to their other characteristics (ignoring their low-level radioactivity), in accordance with the normal liquid-waste assessment and classification procedure specified in Section 3.

   Non-liquid wastes must be classified according to their other characteristics (ignoring their low-level radioactivity), in accordance with the normal non-liquid-waste assessment and classification procedure specified in Section 3.

It is recommended that you read Section 4.6.4 *Managing and disposing of radioactive wastes.*

SECTION 4 MANAGING CLASSIFIED WASTE

4.1 Transporting classified liquid wastes

Depending on the classification of a liquid waste, the generator may need to use a licensed transporter and the waste may need to be taken to a licensed mobile waste processor or licensed waste facility.

In the case of liquid waste classified as hazardous, Group A, Group B or Group C, a licensed transporter must be used, subject to certain exceptions. (See Section 2.1.2.)

Transporters are responsible for ensuring that their transport licence allows them to carry the particular liquid waste, and for transporting the waste to an appropriately licensed facility or mobile waste processor.

If the waste is hazardous waste or Group A waste the transporter must carry, with each load, duly completed waste data forms about the consigned waste, and provide a copy of each to the waste facility or mobile waste processor to which the load is delivered.

4.2 Transporting classified non-liquid wastes

Depending on the classification of a non-liquid waste, the generator may need to use a licensed transporter and the waste may be able to be taken to some disposal facilities and not others.

In the case of waste classified as industrial or hazardous and for the transportation of tyres, a licensed transporter must be used, subject to certain exceptions.

Transporters are responsible for ensuring that their transport licences allow them to carry the particular classified waste, and for transporting the waste to an appropriately licensed facility.

If the waste is hazardous waste or industrial waste, the transporter must carry (subject to some exceptions), with each load, duly completed waste data forms about the consigned waste, and provide a copy of each to the waste facility or mobile waste processor to which the load is delivered.

4.3 Disposing of classified liquid wastes

Liquids are less easily contained than non-liquid wastes, so that their dissolved and suspended contaminants have a greater potential to contaminate land and waters than non-liquid wastes. This can occur by run-off to surface waters or by infiltration through soil to sub-surface waters. If liquid waste percolates through other (non-liquid) waste at the site before run-off or infiltration, it can also be further contaminated with dissolved or suspended contaminants.

For this reason it is most desirable that only non-liquid wastes should be accepted for disposal at landfills.

The majority of licensed landfills in the Sydney metropolitan area already have a condition in their licences prohibiting the receipt of liquid waste. It is intended that this condition will be gradually extended to other licensed landfills throughout NSW.

It proposed that from 1 July 2000 the disposal of liquid wastes to non-licensed landfills be banned. It is further proposed that from 1 July 2001 the disposal of liquid wastes to licensed landfills also be banned. This ban would be introduced through changes to existing licence conditions for all licensed landfills.

Before the introduction of any ban, the EPA will consult with key stakeholders—including local government and the waste processing industry—to ensure that liquid wastes diverted from landfills can be either treated effectively by existing or new liquid waste-treatment facilities, or be able to be used beneficially.

- It is recognised that in rural NSW (that is, outside the Sydney Metropolitan Area and the Extended Regulated Area), infrastructure for the treatment of liquid wastes is not yet available in all areas. In this case, occupiers of licensed *solid waste class 1 landfills* are encouraged to notify the EPA that they are accepting liquid wastes such as septic tank pump-out wastes and grease-trap pump-out wastes, so that their licence conditions can be framed to enable this activity. These licence conditions would be of a temporary nature and valid only until 30 June 2001, in line with the proposed ban. Conditions will be granted only to those landfills at which, in the opinion of the EPA, the disposal of liquids will not create significant threats to the environment, and where alternative management options for the liquid wastes are deemed to be currently unfeasible.

Applications from rural licensed landfills will need to provide the information outlined in Part 1 of Technical Appendix 7. Landfill occupiers will also need to submit an annex to their existing Landfill Environment Management Plan (LEMP), describing how they propose to manage the receipt of such liquid wastes in a way that minimises the potential adverse environmental and/or health impacts of this activity.

Technical Appendix 7 contains two new benchmark techniques, one dealing with *aqueous liquid treatment ponds* and the other dealing with the *disposal of liquid waste to landfill;* these should help landfill occupiers to prepare the annex to their LEMPs.

If a licence is modified to permit the receipt of certain liquid-waste types, the licence will also have additional condition(s) attached to it to ensure that such waste is managed in an environmentally acceptable and sustainable manner.

Environmental or health issues arising from the receipt of liquid wastes at non-licensed landfills will be addressed through the *clean-up notices* under Part 4.2 of the Operations Act.

Note that even if liquid waste is assessed as *non-controlled aqueous liquid waste,* this does not mean that it can be discharged into the environment or that it is suitable for beneficial use. A person discharging *non-controlled aqueous liquid wastes* to land or waters who believes that in doing so he/she may pollute land or waters may consider applying for a licence issued under the *Protection of the Environment Operations Act 1997.* It is an offence to pollute waters unless the polluter holds a licence and complies with the conditions of that licence.

4.4 Disposing of classified non-liquid wastes

All licensed landfill facilities will be in one of the five classes or subclasses as follows:

Inert:	Class 2
	Class 1
Solid:	Class 2
	Class 1

Industrial:

Each class or subclass will have licence conditions setting out those wastes that may or may not be received, in accordance with Table 7.

Table 7: Disposal of wastes to the different classes of landfills

Type	Wastes able to be received
Inert Waste Class 2 Landfill	Waste that is not a physically, chemically or biologically fixed, treated or processed waste that is assessed as *inert waste* following the technical assessment procedure outlined in Technical Appendix 1 of these guidelines, or that is specified as *inert waste* in Schedule 1 of the *Protection of the Environment Operations Act 1997*, **except** biosolids.
Inert Waste Class 1 Landfill	Waste assessed as *inert waste* following the technical assessment procedure outlined in Technical Appendix 1 of these guidelines, or that is specified as *inert waste* in Schedule 1 of the *Protection of the Environment Operations Act 1997*, and stabilised asbestos wastes in bonded matrix.
Solid Waste Class 2 Landfill	Waste, excluding putrescible waste, that is assessed as *inert waste or solid waste* following the technical assessment procedure outlined in Technical Appendix 1 of these guidelines, or that is specified as *inert waste or solid waste* in Schedule 1 of the *Protection of the Environment Operations Act 1997*, and asbestos waste (including asbestos waste in bonded matrix and asbestos fibre and dust waste resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material, and dust from ventilation collection systems).
Solid Waste Class 1 Landfill	Waste, including putrescible waste, that is assessed as *inert waste or solid waste* following the technical assessment procedure outlined in Technical Appendix 1 of these guidelines, or that is specified as *inert waste or solid waste* in Schedule 1 of the *Protection of the Environment Operations Act 1997*, and asbestos waste (including asbestos waste in bonded matrix and asbestos fibre and dust waste resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material, and dust from ventilation collection systems).
Industrial Waste Landfill	Waste that is assessed as *inert waste, solid waste or industrial waste* following the technical assessment procedure outlined in Technical Appendix 1 of these guidelines, or that is specified as *inert waste, solid waste or industrial waste* in Schedule 1 of the *Protection of the Environment Operations Act 1997*, except putrescible waste, unless specifically permitted in the licence.

conditions of environment protection licences issued to scheduled landfill sites may permit the ipt of waste not listed in Table 7, such as specified types of liquid waste or small quantities of ical waste at Solid Waste Class 1 Landfills operated by rural local councils.

ain non-licensed rural landfills may also accept types of liquid waste or small quantities of ical waste as specified in subclause (1)(b)(ii) of 'waste facilities' reproduced from Schedule 1 to perations Act in Technical Appendix 9 of these guidelines.

Treating and reprocessing classified wastes

ent waste types can require very different treatment methods to reduce the risk of mmental harm.

icular, hazardous wastes must be treated prior to disposal.

ently, the EPA does not have a list of approved waste treatment processes, and processes are ed on a case by case basis.

Waste treatment processes should:

- be technically sound
- be environmentally safe
- reduce the level of contaminants or reduce the extent of the environmental hazard
- recover useful materials from the waste where possible
- not increase substantially the overall quantity of waste
- meet other EPA requirements for emissions to air and water, should they be specified
- meet other EPA requirements for the specific waste type, should they be specified.

Applications for approvals or licences for treatment technologies for scheduled chemical wastes and polychlorinated biphenyl wastes are assessed according to the following ANZECC protocols:

- National Protocol: Approval/Licensing of Trials of Technologies for the Treatment/Disposal of Schedule X Wastes.
- National Protocol: Approval/Licensing of Commercial Scale Facilities for the Treatment/Disposal of Schedule X Wastes.

4.6 Wastes requiring special handling and disposal conditions

4.6.1 Storing, handling, transporting and disposing of asbestos wastes

Clause 29 of the Waste Regulation contains new provisions for asbestos waste to replace the now revoked Asbestos Waste Chemical Control Order originally made under the *Environmentally Hazardous Chemicals Act 1985*.

The provisions below apply to any activity that involves the transportation, collection, storage, or disposal of any type of asbestos waste, regardless of whether the activity is required to be licensed.

Transportation requirements for asbestos waste are as follows:

- any type of asbestos waste must not be transported unless it is conveyed in a covered leak-proof vehicle so as to prevent any spillage or dispersal of the waste
- if asbestos waste that is in the form of stabilised asbestos waste in bonded matrix is to be transported and the waste is not stored in a bag in accordance with the requirements for collection and storage (see below), the waste must be wetted before it is transported
- any vehicle used to transport any type of asbestos waste must be cleaned before leaving the landfill site at which the waste is disposed of, so as to ensure that all residual asbestos waste is removed from the vehicle.

Collection and storage requirements for asbestos waste are as follows:

- asbestos waste that is in the form of asbestos fibre and dust waste must be covered in such a manner as to prevent the emission of any dust
- asbestos waste that is in the form of asbestos fibre and dust waste must not be collected and stored except in accordance with the following procedures:

  —the waste must be collected and stored in impermeable bags

—each bag must be made of heavy duty low-density polyethylene of at least 0.2-mm thickness, and have dimensions of no more than 1.2 m in height and 0.9 m in width

—each bag must be sealed by a wire tie, and contain no more than 25 kg of waste

—each bag must be marked with the words 'CAUTION ASBESTOS' in letters that are of not less than 40 mm and that comply with Australian Standard AS 1319—*Safety Signs for the Occupational Environment*

- if asbestos waste in any form is stored in a bag, the following procedures must be followed:

—the bag must be placed in a leak-proof container that is used only for the purposes of storing asbestos waste, and

—the container must be marked with the words 'DANGER-ASBESTOS WASTE ONLY—AVOID CREATING DUST' in letters that are of not less than 50 mm and that comply with Australian Standard referred to in paragraph above, and

—the container must have a close-fitting sealed cover so as to prevent any spillage or dispersal of the waste

asbestos waste in any form must not be stored except in accordance with the following procedures:

—the waste must be stored in a secure area so as to prevent entry by unauthorised persons and to prevent the risk of environmental harm

—the waste must, if it is practicable to do so, be stored separately from other types of waste

if asbestos waste that is in the form of stabilised asbestos waste in bonded matrix is stored otherwise than in a bag (as detailed above), the following procedures must be followed:

—if it is practicable to do so, the waste must be wetted so as to prevent the emission of any dust

—in wetting the asbestos waste, care must be taken to ensure that the wetting process does not cause any emission of dust or lead to any discharge of polluted water

—the waste must be kept covered at all times

Disposal requirements for asbestos waste are as follows:

- asbestos waste in any form must be disposed of only at a landfill site that may lawfully receive the waste
- disposal of asbestos waste in any form must be by way of burial
- before disposal of the asbestos waste, arrangements must be made with the occupier of the landfill site for the purposes of ensuring that the asbestos waste will be covered:
  - initially to a depth of at least 0.5 m, and
  - finally to a depth of at least 1 m (in the case of stabilised asbestos waste in bonded matrix) or 3 m (in the case of asbestos fibre and dust waste) beneath the planned final land surface of the landfill site
- the asbestos waste must:
  - be disposed of in accordance with the arrangements in the paragraph above, and
  - be buried to the initial depth on the same day it is received at the landfill site
- in disposing of asbestos waste in any form at a landfill site, the waste must:
  - be unloaded in such a manner as to avoid the creation of dust, and
  - not be compacted before it is covered, and
  - not come into contact with any earthmoving equipment at any time

- The regulation prohibits the use of asbestos waste in any form as road making material.

  The definition of **asbestos waste** specified by the regulation is as defined in these guidelines (see Definitions and Glossary).

4.6.2 Managing and disposing of clinical waste

The following definition of clinical waste was developed by the NSW Department of Health. It replaces the two previous categories of clinical waste (*general clinical waste* and *special clinical waste*). *Clinical waste* is classified as *hazardous waste*. Sharps waste and cytotoxic waste are also classified as types of *hazardous waste* in Schedule 1, Part 3 of the Operations Act:

'**clinical waste** means any waste resulting from medical, nursing, dental, pharmaceutical, skin penetration or other related clinical activity, being waste that has the potential to cause injury, infection or offence, and includes waste containing any of the following:

(a) human tissue (other than hair, teeth and nails),

(b) bulk body fluids or blood,

(c) visibly blood-stained body fluids, materials or equipment,

(d) laboratory specimens or cultures,

(e) animal tissue, carcasses, or other waste, from animals used for medical research,

but does not include any such waste that has been treated by a method approved in writing by the Director-General of the Department of Health.'

'**sharps waste** means any waste resulting from medical, nursing, dental, veterinary, pharmaceutical, skin penetration or other related clinical activity, and that contains instruments or devices:

(a) that have sharp points or edges capable of cutting, piercing or penetrating the skin (e.g. needles, syringes with needles or surgical instruments), and

(b) that are designed for such a purpose, and

(c) that have the potential to cause injury or infection,

but does not include any such waste that has been treated by a method approved in writing by the Director-General of the Department of Health.'

Other wastes that are classified separately as *hazardous waste* and that may be also be generated in a clinical setting are:

- radioactive substances
- cytotoxic wastes
- pharmaceuticals and poisons
- chemical wastes.

As a general rule, the above *hazardous wastes* should be managed separately from one another and from other wastes generated in a clinical setting that are not assessed and/or classified as *hazardous waste*. Effective source separation and segregation of the different waste streams in a clinical setting are essential for compliance with the legal requirements of the Operations Act and for protecting the health and safety of workers and the environment.

Once clinical waste has been treated by a method approved by the Director-General of the NSW Department of Health, it is no longer classified as clinical waste or as hazardous waste, and therefore it must be assessed and classified in accordance with the provisions in these guidelines.

Other waste types generated in a clinical setting that are *not* defined as *clinical waste* may be found under other classifications in Schedule 1 of the Operations Act such as:

- office and packaging waste (*inert waste*)
- non-chemical waste generated from manufacturing and services (*solid waste*)
- food waste (*solid waste*)
- disposable nappies, incontinence pads and sanitary napkins (*solid waste*).

For requirements relating to the need or otherwise for obtaining an *environment protection licence* as a waste activity (generation and/or storage of waste), see Section 2.1.1 of these guidelines.

Guidance relating to the management of *clinical waste* and other waste generated in a clinical setting may be found in the *Waste Management Guidelines for Health Care Facilities* (NSW Health 1998).

Recognising that doctors, dentists, hospitals and other generators of clinical waste located in remote parts of the NSW do not have access to facilities which treat clinical waste, provisions have been made for the landfill disposal in rural areas of very small quantities of clinical waste that does not contain recognisable body parts, sharps waste, cytotoxic waste or radioactive waste. The Protection of the Environment (Waste) Regulation 1996 has been amended to include a new Clause 30 to enable the landfill disposal of clinical waste in quantities of no more than 40 kg on each occasion in non-licensed landfills in rural areas, provided that the following conditions are met:

- the waste must be disposed of only at a waste facility that is operated by a local authority and located outside the Sydney metropolitan area or Extended Regulated Area
- the written approval of the local authority must be obtained before the waste is disposed of
- the waste to be disposed of must have been generated outside the Sydney metropolitan area or Extended Regulated Area
- the waste must not contain recognisable body parts, sharps waste, cytotoxic waste or radioactive waste
- the waste must be packaged in accordance with the requirements set out in the document called NSW Health: *Waste Management Guidelines for Health Care Facilities* issued by the Department of Health and dated August 1998
- the waste must not be disposed of in amounts that exceed 40 kg at any one time
- the waste must be buried, or be immediately contained, in a manner that prevents the waste coming into contact with any person or animal.

A council outside the Sydney Metropolitan Area and the Extended Regulated Area will also be able to apply to the EPA to have the licence of their solid waste class 1 landfill modified in order to enable them to receive small quantities (no more than 200 kg on any one occasion) of clinical waste. The application would need to document that the council has no reasonable access to clinical waste-treatment facilities. The conditions would have similar limitations to those for unlicensed landfills, described above.

4.6.3 Managing and disposing of radioactive wastes

The principal legislation for the control of radioactive materials in NSW is *the Radiation Control Act 1990* (the Radiation Act) and Regulation (1993). The Radiation Act requires those who use or sell radioactive substances to hold a licence for all high activity sources that, when requiring disposal, correspond to the types of sources classified as Hazardous Waste in these guidelines. The Radiation Act also controls the disposal of such sources. Any person handling radioactive sources in this category requires a Radiation Act licence to do so.

The process that must be used for the classification of radioactive materials may be found in Section 3.5.

The *hazardous waste* criteria used in these guidelines have been extended downwards in activity by a factor of some 100, in the case of liquid radioactive wastes, to reflect the additional risk associated with liquid radioactive wastes. The corresponding classification for non-liquid radioactive wastes is *industrial waste*. In both cases the Radiation Act does not directly control the disposal of these low level radioactive wastes—rather, a system of licence conditions and *consent to dispose* is attached to a licence, either under the Radiation Act or the *Protection of the Environment Operations Act 1997*.

Radioactive material that has very low levels of activity (including materials with naturally occurring background levels) is recognised as being 'below regulatory concern'. The criteria adopted in these guidelines for the levels of radioactivity that permit wastes to be classified in the inert waste, solid waste or non-controlled aqueous liquid waste categories closely relate to the international criteria used for assessing radioactive materials as being 'below regulatory concern'. Disposal of such materials does not require formal approval, but you should seek advice in the case of liquid wastes to ensure compliance with other requirements (for example, trade waste agreements).

4.6.4 Management of approved immobilised non-liquid wastes

General and specific approvals relating to the immobilisation of contaminants in waste, and how such approvals affect the process of assessing and classifying wastes, are discussed in section 3.4.4 and Technical Appendix 2.

Such approvals may specify conditions relating to the subsequent storage, treatment or disposal of the waste, and these must not be contravened. A penalty (as specified in Clause 27 of the Waste Regulation) may be imposed for failure to comply with all of the conditions of such approvals.

Immobilised wastes containing Scheduled Chemical Wastes or polychlorinated biphenyls in concentrations of 50 mg/kg or greater cannot be disposed of to landfill.

For details of how the approvals system works, how to manage approved immobilised non-liquid wastes, and also how to make applications for approvals of immobilisation, see Technical Appendix 2.

4.7 Record-keeping requirements for classified wastes

Licensed and non-licensed waste activities, waste transporters and waste facilities need to maintain records of waste movements. Licensed landfill occupiers are required to report periodically to the EPA. These requirements ensure that records of industrial, hazardous, Group A Group B or Group C waste movements are maintained and are used to verify that these wastes have been appropriately managed. Reporting waste movements also provides data to evaluate the effectiveness of waste reduction programs, and meets national and international reporting obligations.

The reporting requirements provide a robust and auditable waste-tracking system to replace the previous hazardous-waste consent and tracking system (the five-docket system).

All of the following who hold licences will be required, via licence conditions, to record details of waste movements, and, in the case of hazardous, industrial and Group A wastes, to provide reports periodically to the EPA:

- generating and storage activities involving industrial, hazardous or Group A waste
- waste transporters carrying industrial, hazardous, Group A, Group B or Group C waste
- waste facilities receiving industrial, hazardous, Group A or Group B waste
- mobile waste processors receiving industrial, hazardous or Group A waste.

The Waste Regulation sets out record-keeping requirements for nominated non-licensed waste facilities, waste activities and transporters in clauses 15, 16 and 17.

Non-licensed hazardous, industrial and Group A waste generating and storage activities

Clause 16 of the regulation imposes the following record-keeping requirements on non-licensed waste activities:

The EPA (or such other person or body as may be approved by the EPA) must be provided with such information as they may require in relation to the generation, storage, treatment or disposal of the waste. Such information must be retained by the person for a period of at least three years from the time it is provided.

The approved waste data form required to be completed in relation to any industrial, hazardous or Group A waste (or a combination of these) transported from the premises for treatment or disposal must be kept for a period of at least three years from the time the form was completed. See section 2.3.1 for further details.

Non-licensed transporters

Clause 17 of the regulation imposes the following record-keeping requirements on non-licensed waste transporters:

The EPA (or such other person or body as may be approved by the EPA) must be provided with such information as they may require in relation to the transportation of waste. Such information must be retained by the transporter for a period of at least three years from the time it is provided.

The approved waste data form which the transporter is required to complete in relation to any industrial, hazardous or Group A waste (or a combination of these) that is transported, must be kept for a period of at least three years from the time the form was completed. See section 2.3.2 for further details.

Reporting requirements for non-licensed landfill sites

Clause 15 of the regulation imposes the following record-keeping requirements on non-licensed landfill sites:

The EPA may (by notice in writing) require the occupier to provide certain information relating to the landfill site. The occupier must provide the information to the EPA within 30 days of receiving the notice.

- Within 30 days of the end of each subsequent financial year, the occupier of a landfill site must provide the EPA with such information as the EPA requires in respect of the landfill site (in the approved form).

4.8 Good management practices for all classes of waste

Waste is a resource, with reuse, recycling, reprocessing and processing being strongly preferred options over disposal, as has been made clear in the establishment of the waste management hierarchy.

4.8.1 Waste separation

It makes good sense to keep various components of a waste stream separate whenever practicable, both from financial and conservation points of view. For example:

- Industrial, hazardous or Group A waste (which may be a very small fraction of the total waste), when mixed with other wastes, can turn all the waste into industrial, hazardous or Group A waste—this can result in much higher management costs.
- Recyclable waste, when kept separate from other waste, can generate income (for example, metals, clean office paper and so on) rather than incur a disposal cost.
- The fewer the types of waste materials that are mixed together, the easier it is to assess and classify the waste.
- Some types of waste may have lower disposal costs than others (for example, metals, clean office paper, recyclable solvents and oils) if they are kept separate.

4.8.2 Reuse, recycling or reprocessing of liquid and non-liquid waste

The EPA is encouraging all sections of industry to develop voluntary standards, giving criteria for the beneficial reuse of waste generated either without any treatment or with processing, reprocessing or treatment. If the standards are proven by the proponents to be environmentally sound, the EPA may consider endorsing these beneficial reuse criteria. This will enable such materials to be removed from the waste stream, and will conserve virgin natural resources.

The EPA has identified three major issues that should be carefully addressed and documented in proposals of criteria for beneficial use. These are:

- that the use of a waste should provide measurable benefits to the environment, such as the conservation of natural resources
- that cost-effective higher-order uses of the waste according to the Waste Management Hierarchy are not available
- that the single or repeated use of the waste in the manner proposed will not result in either immediate, delayed or cumulative damage to the local or overall environment.

For example, if it were proposed to apply a liquid organic waste to soil, proposals should demonstrate:

- that the application has a desired beneficial effect on the productivity of the soil it is being applied to, and that it allows for a reduction in the quantities of human-made fertilisers being used
- that there are no higher-order uses available for such waste than as a fertiliser/soil-conditioner

- that the waste does not contain contaminants (such as undesirably high concentrations of heavy metals and other chemical or biological species, which can contaminate the soil, ground water or surface water, or have negative effect(s) on human/animal health, flora or fauna) or other substances that may, for example, cause a deterioration in the physical structure of the soil, as a result of single or repeated applications.

The EPA has produced (or has in preparation) the following guidelines for the beneficial use of wastes:

- *Environmental Guidelines: Use & Disposal of Biosolids Products* (1997)
- *Draft Guidelines for the Utilisation of Treated Sewage Effluent by Irrigation* (1995)
- *Draft Environmental Guidelines: Composting and Related Facilities* (in preparation).

SECTION 5 COMMON QUESTIONS AND ANSWERS

5.1 How did the EPA develop these guidelines?

These guidelines were developed by combining the *Environmental Guidelines: Assessment, Classification and Management of Non-Liquid Wastes* (EPA 1997) with the *Draft Environmental Guidelines: Assessment, Classification and Management of Liquid Wastes*. Both documents have had the benefit of feedback from community and stakeholder consultation before being finalised.

The changes made to the text relating to non-liquid wastes are primarily related to the transfer of waste provisions from the *Waste Minimisation and Management Act 1995* to the *Protection of the Environment Operations Act 1997*, and the changes in provisions associated with this move. Other changes were made to clarify the intent of the provisions in the guidelines and to correct some anomalies that became apparent as stakeholders began to use the guidelines.

5.2 Do these guidelines apply to the assessment of contaminated sites?

No. These guidelines are not intended to be used to assess contaminated sites. The EPA has other guidelines for that purpose.

If waste soil does not meet the criteria for beneficial reuse as specified or approved by the EPA, and the soil needs to be disposed of to landfill, these guidelines should be used to assess and classify the soil before disposal. Note, however, that from a broad policy perspective, the EPA continues to support the ANZECC hierarchy for site clean-up as set down in the *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* (ANZECC/NHMRC, January 1992 page 5):

'The preferred order of options for site clean-up and management are:

- on-site treatment of the soil so that the contaminant is either destroyed or the associated hazard is reduces to an acceptable level, and
- off-site treatment of excavated soil, which, depending on the residual of contamination in the treated material, is then returned to the site, removed to an approved waste disposal site or facility or used as fill for landfill.

Should it not be possible for either of these options to be implemented, then other options that should be considered include:

- removal of contaminated soil to an approved site or facility, followed where necessary by replacement with clean fill
- isolation of the soil by covering with a properly designed barrier
- choosing a less sensitive land use to minimise the need for remedial works, may include partial remediation, and
- leaving contaminated material in-situ, providing there is no immediate danger to the environment or community and the site has appropriate controls in place.'

Consult Schedule 1 of the *Protection of the Environment Operations Act 1997* to determine whether premises where contaminated soil is treated or processed on site are scheduled, and whether they require an *environment protection licence.*

5.3 Do these guidelines apply if I handle chemical wastes (including scheduled wastes) subject to a Chemical Control Order?

Certain chemicals and declared chemical wastes are controlled in NSW by Chemical Control Orders (CCOs) made under the *Environmentally Hazardous Chemicals Act 1985.* (See Table 8.) The Hazardous Chemicals Advisory Committee has recommended to the EPA that certain chemicals and wastes require additional or more stringent controls, which are set out in the CCOs. This is because these chemicals and wastes are considered to present a particular threat to the environment, and require special management—for example, they may persist in the environment or bioaccumulate in animals. CCOs will generally set out requirements for manufacturing, keeping, using, processing, storing, selling, transporting or disposing of these chemicals and declared chemical wastes.

The provisions of the *Environmentally Hazardous Chemicals Act 1985* and the relevant Chemical Control Orders made under it (see Table 8) are currently subject to review. Until this review is completed, these Orders apply in addition to the waste regulations.

Any person handling any substances listed in Table 8 should read the relevant CCO to determine the appropriate legal requirements. A licence under the Environmentally Hazardous Chemicals Act may be required.

Similarly, any person holding or needing an Environmentally Hazardous Chemicals Act licence for any of the wastes listed in Table 8 may also need a licence under the *Protection of the Environment Operations Act 1997.*

Table 8: Chemicals or declared chemical wastes subject to Chemical Control Orders

Chemical or declared chemical waste	Chemical Control Order
Aluminium smelter wastes	Chemical Control Order in Relation to Aluminium Smelter Wastes Containing Fluoride and/or Cyanide 1986
Dioxin-contaminated wastes	Chemical Control Order in Relation to Dioxin-Contaminated Wastes 1986
Organotin wastes	Organotin Waste Materials Chemical Control Order 1989
Polychlorinated biphenyl materials and wastes[1]	PCB Chemical Control Order 1997
Scheduled chemical wastes[2]	Scheduled Chemical Wastes Chemical Control Order 1994

Notes:

1. Guidelines for the management of polychlorinated biphenyls (PCB) and PCB wastes are under preparation.
2. See Technical Appendix 5.

5.4 To what extent is the generator responsible for the assessment and classification of waste?

The waste assessment processes documented in these guidelines will make the criteria for classifying liquid and non-liquid waste transparent, and will enable waste generators/owners State-wide to:

- assess their waste consistently
- ensure that their waste is reused, recycled, processed, reprocessed, transported, treated, stored or disposed of lawfully
- make significant improvements in their waste generation and management practices.

The generator or owner is responsible for producing documentation that conveys the correct classification of the waste to the waste transporter and the waste management facility receiving the waste.

5.5 How often does the generator need to test waste to demonstrate that it is assessed and classified with due diligence?

There are no specified legal requirements in relation to sampling and testing.

It may not be necessary to test the waste at all if the generator knows the process(es) that led to the production of the waste and the maximum possible levels of contaminants in the waste, and is certain that the waste can be classified without testing.

Liquid wastes

The generator may decide after initial testing of a particular liquid waste stream that he/she wishes to treat all waste in that stream as being *controlled aqueous liquid wastes*. In this case no further testing will be necessary unless the controlled waste facility that receives such liquid waste requires test data.

There may be situations in which frequent testing for an initial period may show sufficient consistency in the characteristics of a liquid waste stream to give the generator confidence that all waste in that stream can be classified as *non-controlled aqueous liquid waste* and that the frequency of testing can be reduced significantly.

On the other hand, some waste streams could show such large variations in properties that every load of waste would need to be carefully sampled and tested before classification. This would apply only if the waste generator wanted to be able to manage loads that are *liquid waste not requiring a licence* differently from those that do require the use of *licensed transporters* and that must be delivered to *licensed waste facilities* or *licensed mobile waste processors*.

Non-liquid wastes

There may be situations in which frequent testing for an initial period can show sufficient consistency in the characteristics of the waste stream to give the generator confidence to be able to reduce the frequency of testing significantly.

On the other hand, some waste streams could show such large variations in properties that every load of waste would need to be carefully sampled and tested before classification.

Sampling

The aim of sampling is to get a sample population that truly represents the average levels of contaminants present in the waste. This document contains some guidance on sampling (see Technical Appendix 1); however, help from an expert is advisable in some cases.

5.6 Do transporters, mobile waste processors and waste facility operators need to assess the waste they receive?

Transporters, mobile waste processors and waste facility operators should be able to rely on the assessment and classification process of the waste generator. It is important for the waste industry to have proper commercial agreements with waste generators and to insist that written documentation concerning each load of waste is received from generators. It may be an advantage to conduct occasional random audits on waste received, in order to ensure that the waste has been classified correctly by the generator.

Documenting the movement of waste will also enable waste generators and transporters to demonstrate that the waste has been delivered to a facility that is licensed or that can otherwise lawfully receive the waste.

5.7 What other documents do I need to read?

NSW Legislation

The *Protection of the Environment Operations Act 1997*, the Protection of the Environment Operations (Waste) Regulation 1996, the Protection of the Environment Operations (General) Regulation 1998 and the *Waste Minimisation and Management Act 1995* are the most important documents to be familiar with when reading these guidelines.

Specific environmentally hazardous chemicals are dealt with in the *Environmentally Hazardous Chemicals Act 1985*, the Environmentally Hazardous Chemicals Regulation 1994 and the relevant *Chemical Control Orders* (CCOs) (see Section 5.3).

Radioactive materials are dealt with in the *Radiation Control Act 1990* and the Radiation Control Regulation 1993.

Environmental planning issues in NSW are dealt with in the *Environmental Planning and Assessment Act 1979* and Environmental Planning and Assessment Regulation 1994.

NSW EPA guidelines and documents

Landfill environmental issues are dealt with in:

- *Environmental Guidelines: Solid Waste Landfills* (1996)
- *Environmental Guidelines: Industrial Waste Landfilling* (under preparation—draft version available).

Contaminated site and soil management issues are dealt with in:

- *Contaminated Sites: Guidelines for Assessing Service Station Sites* (1994)
- *Contaminated Sites: Guidelines for the Vertical Mixing of Soil on Former Broad-acre Agricultural Land* (1995)
- *Contaminated Sites: Sampling Design Guidelines* (1995)

- *Guidelines for Consultants Reporting on Contaminated Sites* (1997)
- *Guidelines for the NSW Site Auditor Scheme* (1998)
- *Guidelines on Significant Risk of Harm from Contaminated Land and the Duty to Report* (1999)
- *Discussion Paper: Assessment of Orchard and Market Garden Contamination Sites* (1995).

Biosolids management issues are dealt with in:

- *Environmental Guidelines: Use & Disposal of Biosolids Products* (1997).

Commonwealth Government legislation and documents

- *Australian Code for the Transport of Dangerous Goods by Road and Rail* (6th edition, National Road Transport Commission 1998).
- Radiation Health Series No.13, *Code of Practice for the Disposal of Radioactive Wastes by the User* (National Health and Medical Research Council, 1985)
- *National Environment Protection (Movement of Controlled Wastes between States and Territories) Measure* made under the National Environment Protection Council Act 1994 of the Commonwealth on 26 June 1998.

5.8 Where can I get copies of these other documents?

Printed copies

You can get guidelines and other EPA documents by telephoning the EPA's Pollution Line on 131 555 (NSW callers only) or (02) 9325 5555 (until end October 1999), and (02) 9733 5000 (from November 1999).

Get copies of NSW Acts and Regulations and other publications from the Government Information Service NSW—phone 1800 463 955 (free call) or (02) 9743 7200.

Copies of Commonwealth Acts, Regulations, Codes and other documents are available from the Commonwealth Government Bookshop, 32 York Street, Sydney—phone (02) 9299 6737.

Access via the Internet

The following are useful Internet site addresses for information that you may need:

- the NSW EPA's web page with links to other sites:
  —http://www.epa.nsw.gov.au
- Australasian Legal Information Institute:
  —Acts and Regulations for all States and the Commonwealth: http://www.austlii.edu.au/
  —NSW Acts: http://www.austlii.edu.au/au/legis/nsw/consol_act/
  —NSW Regulations: http://www.austlii.edu.au/au/legis/nsw/consol_reg/
- Environment Australia, Environment Protection Group (formerly CEPA):
  —http://www.erin.gov.au/index.html
- Commonwealth *Worksafe* issues:
  —http://www.worksafe.gov.au/~wsa1/index.htm
- Commonwealth transport-of-dangerous-goods issues:
  —http://www.dot.gov.au/programs/fors/dgoodsum.htm

The advantages of gaining access to legislative documents via the Internet are:

- documents are updated very soon after Parliament makes changes to them
- you can get the information you need very quickly
- you can conduct searches on the document to locate the parts of specific interest to you
- you can print out only those parts that you require, and save resources.

5.9 How do I handle Hazardous Materials Incident Waste?

The NSW Fire Brigades is responsible for protecting and saving life and property that is endangered by hazardous materials incidents.

The EPA's main role in hazardous materials incidents is to provide technical advice about the properties of the materials to the NSW Fire Brigades and other agencies, as well as to advise on minimising the environmental impact of the incident. The EPA will also take evidence and consider legal action against land owners/occupiers of premises or owners of the materials causing the environmental damage.

In most instances, the EPA will direct that waste generated as a result of a Hazardous Materials Incident be disposed of by the party responsible for the waste, according to the normal EPA requirements. When necessary, the EPA may direct that the waste be stored until it can be identified and/or managed according to the requirements.

However, in the case of a Hazardous Materials Incident where there is an immediate and significant threat to the environment, Part 4.2 of the *Protection of the Environment Operations Act 1997* may apply, and further advice as to disposal procedures should be obtained from the EPA.

You should contact your local office of the EPA during business hours. (For addresses and telephone numbers see the back page of these guidelines.) For instructions relating to the management of the waste arising from the clean-up of an emergency spill, contact the Pollution Line on 131 555 (NSW callers only) or (02) 9325 5555 (until end October 1999) and (02) 9733 5000 (from November 1999).

5.10 How do I manage school laboratory waste?

The following document will contain information to help you manage chemical laboratory wastes generated in your school in an environmentally responsible manner:

Safe use and storage of workplace chemicals in schools (New South Wales Department of School Education 1998).

5.11 How do I manage excavated acid sulfate soils in landfills?

Acid sulfate soils (ASS) are the common name given to naturally occurring sediments and soils containing iron sulfides (principally iron sulfide or iron disulfide or their precursors). The exposure of the sulfide in these soils to oxygen by drainage or excavation leads to the generation of sulfuric acid.

Acid sulfate soils occur in coastal areas of NSW and pose a significant risk to the environment if they are not managed appropriately. They can cause water quality problems that kill fish and shellfish and can lead to significant infrastructure damage (such as to roads and bridges). The use of the term *'acid sulfate soils'* in these guidelines includes *'potential acid sulfate soil'* and *'actual acid sulfate soil'* as defined by ASSMAC (1998) and listed in the Definitions and Glossary section of these guidelines.

The Department of Land and Water Conservation (DLWC) has produced ASS Risk Maps to identify the probable location of ASS.

The *Acid Sulfate Soil Management Advisory Committee* (ASSMAC) has determined detailed assessment and management techniques, and this information is found in the *NSW Acid Sulfate Soil Manual* (ASS Manual). ASSMAC recommends that ASS should be **managed on-site** in accordance with an *Acid Sulfate Soil Management Plan* (ASSMP) developed in accordance with the ASS Manual. This ASS Manual is available from the Department of Urban Affairs and Planning (DUAP).

If waste ASS cannot be managed on-site, the generator may consider the use of a landfill for disposal if **no other options** are viable. Disposal at a landfill will entail the development of an Acid Sulfate Soil Management Plan, which is required under the ASS Manual by the generator of the waste ASS.

The generator of the waste ASS must subject the soil to the chemical assessment process in Technical Appendix 1 of these guidelines to determine its correct classification. This chemical assessment process will determine whether it contains **other** materials apart from iron sulfides that will affect its disposal. Depending on the outcome of the classification, ASS may be disposed to a Solid Waste or an Industrial Waste Landfill. ASS cannot be disposed to an Inert Waste Landfill, given that it does not satisfy the criteria of *'not capable of environmentally significant physical, chemical or biological transformations'*. (See Section 3.4.3.) In addition, ASS cannot be categorised as Virgin Excavated Natural Material (VENM) because it contains sulfidic materials (see Table 1).

Transportation of waste ASS needs to be undertaken with caution. When transporting ASS, the generator should ensure that the transport time is minimised and the load covered to avoid contact with water and the potential leaching of sulfuric acid.

If the soil has been assessed as either Industrial Waste or Hazardous Waste (see Section 2.1.2), then it must be transported by a licensed waste transporter.

The following principles should be considered and outlined by the generator in an ASSMP:

- Before sending waste ASS to a landfill, arrangements should be made with the occupier to ensure that the landfill is suitable for ASS disposal.
- The status of the waste ASS (potential or actual ASS) should be determined using the assessment techniques outlined in the ASS Manual.
- Potential and actual ASS must be treated by the generator before acceptance by a landfill occupier for disposal. Treatment should be undertaken in accordance with the neutralising techniques outlined in the ASS Manual.

Landfill occupiers should consider the following points when accepting ASS for disposal in a landfill:

- Significant amounts of waste ASS should be managed within a discrete cell (that is, a lined monocell) of a landfill. This will ensure that any potential acidic leachate generated by waste ASS that may not be fully neutralised by the above treatment can be controlled to reduce the likelihood of such leachate coming into contact with other types of waste.