

Department of Toxic Substances Control
Official Policy

**CALCULATING ECONOMIC
BENEFIT OF NONCOMPLIANCE**

DTSC-OP-0004

Subject/Title of Policy

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EO-96-001-PP, EO-02-001-GD and DTSC-OP-0004 (1/30/2009)

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Hazardous Waste Management Program

Target Audience

Issuing Unit

Barbara A. Lee

Director

Name

Title of Approving Authority

Signature

Date Signed

Statutory Reference(s):

Health and Safety Code, Division 20, Chapter 6.5 and its implementing regulations.

This policy and any internal procedures adopted for its implementation are intended solely as guidance. This policy does not constitute a rulemaking by the Department and may not be relied upon to create a specific right or benefit, substantive or procedural, enforceable at law or in equity, by any person. The Department may take action at variance with this policy or any internal implementing procedures.

This policy expires five years from the date of signature.

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TABLE OF CONTENTS

I. PURPOSE	3
II. BACKGROUND	3
III. RELATIONSHIP TO OTHER DOCUMENTS	3
IV. POLICY STATEMENT	3
V. COMPONENTS OF ECONOMIC BENEFIT OF NON-COMPLIANCE	3
A. Delayed Costs	3
B. Avoided Costs	4
C. Examples	5
VI. CALCULATION OF ECONOMIC BENEFIT	5
VII. ROLES AND RESPONSIBILITIES	6
A. Inspector	6
B. Supervisor	6
C. Office of Legal Counsel	6
D. Financial Assurance Unit	7
VIII. REFERENCES	7

ATTACHMENTS

Example A: Illegal Hazardous Waste Storage and Lack of Training Program	8
Example B: Failure to Perform Waste Determination and Illegal Hazardous Waste Disposal	10
Example C: Illegal Hazardous Waste Storage	12

I. PURPOSE

This document sets forth the Department of Toxic Substances Control's (DTSC) policy for calculating economic benefit for violations of the Hazardous Waste (HW) and Hazardous Substances Law or its implementing regulations.

II. BACKGROUND

This policy supersedes EO-96-001-PP, EO-02-001-GD, and DTSC-OP-0004 (January 30, 2009).

III. RELATIONSHIP TO OTHER DOCUMENTS

This policy is applied in conjunction with the California Code of Regulations (CCR), title 22, division 4.5, chapter 22, article 3 and United States Environmental Protection Agency's (U.S. EPA) guidance document, "[Estimating Costs for the Economic Benefits of RCRA Noncompliance](#)," December, 1997.

IV. POLICY STATEMENT

CCR [section 66272.63 \(c\)](#) requires that initial penalties be increased by the amount of economic benefit gained or cost of compliance avoided by a violator as a result of non-compliance, up to the statutory maximum for each violation. Economic benefit includes, but is not limited to, avoided costs, increased profits, utilized capital from delayed or avoided costs, and avoided interest. It is DTSC's policy to use the Benefit Computer Model (BEN) to calculate economic benefit, as appropriate.

The economic benefit for violations is determined on a case-by-case basis depending on case specific facts. Facilities may provide more specific cost data during the negotiation stage of an enforcement action. The figures in this document are provided as guidance only and should be modified, as appropriate.

In certain instances, economic benefit may be relatively insignificant. To simplify and expedite enforcement actions, DTSC may forego the inclusion of economic benefit, if the total economic benefit amount is likely to be less than five hundred dollars (\$500) for all violations. If economic benefit is not pursued and added to the penalty, the decision and rationale must be documented in the Penalty Matrix.

V. COMPONENTS OF ECONOMIC BENEFIT OF NON-COMPLIANCE

A. Delayed Costs

"Delayed costs" are delayed expenditures resulting from failure to comply with legal requirements. The violator will eventually spend the money in order to achieve compliance, but has the benefit of having the funds prior to that time. Delayed costs are either capital investments or one-time non-depreciable costs. For example, by delaying a \$10,000 expenditure for one year, at a simple

annual interest rate of five percent, the violator gains \$500 in economic benefit. BEN provides and applies the compound interest rates depending on the period of non-compliance for the economic benefit calculation. Examples of violations that may result in delayed costs include:

- Off-site storage of HW beyond ten days by a registered transporter;
- On-site storage of HW beyond 90-day accumulation period; or
- Failure to prepare closure plan in a timely manner.

B. Avoided Costs

“Avoided costs” are expenditures the violator avoids by failing to comply with legal requirements. Avoided costs may occur when a facility fails to pay necessary operating and maintenance expenses, which may include periodic expenses such as leasing monitoring equipment. Additional examples of violations that may result in avoided costs include:

- Disposal of HW to a Municipal Solid Waste Landfill;
- Failure to perform waste analysis before adding waste to tanks, waste piles, or other waste management units; or
- Failure to install secondary containment around a hazardous accumulation tank, where the containment system is never installed because the violator chooses tank closure rather than installation of secondary containment and continued operation.

In addition to fees for permit services, such as permit application and modification fees (HSC [section 25205.7](#)), statute also requires facilities to pay annual facility fees (HSC [section 25205.2\(a\)](#)). A hazardous waste facility that operates without the necessary permit or other authorization from DTSC may benefit from avoiding the cost of fees for permit services and annual facility fees.

Current [annual facility fees](#) for a permitted treatment, storage, disposal facility (TSDF) are found on DTSC’s website. Facility fees are regulated by the California Board of Equalization (BOE) and are adjusted annually to reflect the inflation rate ([Hazardous Substances Taxes](#) under Rates). Fee rates for the year that the violation occurred should be used in the economic benefit calculation. If a facility commits a one-time act of operation without authorization (such as storage longer than the allowed time or illegal treatment), fees should not be included as avoided costs. On the other hand, if the facility stores hazardous waste longer than the allowed time continuously, or the treatment activity conducted without authorization is a regular part of business operations, the applicable fees should be included as avoided costs. If the facility, subsequently, applies for the required permit, annual facility fees incurred are considered an

avoided cost, and fees for permit services not spent in a timely manner are considered a delayed cost.

C. Examples

Delayed or avoided costs may be classified into the following categories:

- Capital investments (e.g., purchasing and installing a HW storage tank, pollution control equipment);
- One-time only non-depreciable expenditures (e.g., developing training program, cleaning up a spill); or
- Annually recurring costs (e.g., operating and maintenance costs, annual training costs).

VI. CALCULATION OF ECONOMIC BENEFIT

Economic benefit calculation must be based on the economic concept of “time value of the money” because funds not spent on environmental compliance are available for other profit-making activities, examples include:

- Earning interest on funds;
- Investing funds back into the business; or
- Avoiding the expense of interest to obtain a loan to pay the cost of compliance.

Additionally, the violator may gain economic benefit from an illegal operation, such as an increased revenue from treating, storing or disposing of a larger amount of HW than authorized.

Because BEN focuses exclusively on the economic benefit from delayed and/or avoided costs, economic benefit gained from an illegal competitive advantage should be considered and calculated by other means, as appropriate.

Further guidance to determine cases appropriate for BEN use is provided in [“An Advisory of the Illegal Competitive Advantage \(ICA\) Economic Benefit \(EB\) Advisory Panel of the EPA Science Advisory Board: pg. 20-21,”](#) September 7, 2005.

For avoided costs, the resulting benefit must include interest gained in addition to the avoided costs. Delayed costs typically include interest only.

The steps for calculating economic benefit using BEN are as follows:

Step 1. In accordance with the relevant requirements for HW management, identify the specific activities necessary for a violator to come into compliance.

Step 2. Determine the activities resulting in avoided and/or delayed costs, and classify each cost into capital investments, one-time only non-depreciable, or annually recurring costs. Identify the non-compliance and compliance date, penalty payment date, cost estimate date, and other information, as required.

Note: If assumptions are required by DTSC, the rationale must be documented.

Step 3. Obtain the cost data for delayed and/or avoided requirements.

Step 4. Input cost data into BEN to calculate economic benefit

BEN requires compliance-related information inputs such as the dates of initial non-compliance, compliance, and penalty payment, to perform economic benefit analysis while providing standard values for certain variables. In the event that the values are significantly different from those provided by BEN, inputs may be customized based on the need and availability of case-specific information.

Examples of economic benefit calculations for common violations are included in the Attachment section of this policy. DTSC staff are encouraged to use [U.S. EPA's Cost Table](#), 2016 and U.S. EPA guidance document, "[Estimating Costs for the Economic Benefits of RCRA Noncompliance](#)," December, 1997 with adjustment for inflation using [US Inflation Calculator](#) for common cost estimates, as appropriate. DTSC Environmental Chemistry Laboratory provides its own [analytical costs](#) for environmental samples, if needed. DTSC staff may contact a third-party HW management company or violator to obtain cost data. The economic benefit calculation shall be based on the actual cost, when available.

DTSC's Financial Assurance Unit shall be consulted to review and validate the economic benefit calculation for financial assurance violations, as appropriate.

There may be variations in how to generate results using BEN, depending on data and/or calculation methods selected (e.g., for multiple unauthorized shipments, separate runs can be created for each shipment instead of calculating entire sum).

The least expensive method of compliance should generally be used as the basis for economic benefit calculations.

VII. ROLES AND RESPONSIBILITIES

A. Inspector: Calculates economic benefit utilizing BEN.

B. Supervisor: Reviews and approves Inspector's economic benefit calculation and coordinates with DTSC's Office of Legal Counsel, as appropriate.

C. Office of Legal Counsel: Coordinates with Inspector and Supervisor and provides legal assistance, as appropriate.

D. Financial Assurance Unit: Reviews and validates economic benefit calculations for financial assurance violations.

VIII. REFERENCES

[A Framework for Statute-Specific Approaches to Penalty Assessment:](#)

Implementing EPA's Policy on Civil Penalties, U.S. EPA, February 16, 1984

[An Advisory of the Illegal Competitive Advantage \(ICA\) Economic Benefit \(EB\)](#)

Advisory Panel of the EPA Science Advisory Board: pg. 20-21, September 7, 2005

[Department of Toxic Substances Control Annual Fee Summary](#)

[Estimating Costs for the Economic Benefits of RCRA Noncompliance](#), U.S. EPA, December 1997

[Guidance for Calculating the Economic Benefit of Noncompliance for a Civil Penalty Assessment](#), U.S. EPA, November 5, 1984

[Guidance on Calculating the Economic Benefit of Noncompliance by Federal Agencies](#), U.S. EPA, September 30, 1999

[Hazardous Substances Taxes-Facility Fee](#), California Board of Equalization

[RCRA Civil Penalty Policy](#), U.S. EPA, June 2003

Note: Some of the links embedded in this document are only available internally.

Example A: Illegal Hazardous Waste Storage and Lack of Training Program

Step 1. Describe the case:

ABC is a Large Quantity Generator (LQG). The inspection performed on August 15, 2010 found that it stored three 55-gallon containers (drums) of unknown liquid waste at the facility for at least four years. Waste analysis performed post inspection determined that waste in each of the containers failed Toxicity Characteristic Leaching Procedure (TCLP) for Methyl Ethyl Ketone (MEK) and was ignitable hazardous waste. The facility had other Hazardous Wastes (HW) that were being properly classified and managed. The facility could not provide any documentation that the company had developed a training program. The company was able to document that annual HW management training had been obtained by Environmental Coordinator and three technicians for the last three years. The facility properly disposed HW later (Delayed Cost) and came into compliance with the identified violations on August 31, 2010. Penalty payment was made on November 30, 2010.

Step 2. Identify activities resulting in economic benefit:

- Failure to perform waste determination;
- Failure to obtain waste profile;
- Unauthorized storage of HW beyond 90 days; and
- Failure to develop training program

Step 3. Determine the components and categories of the economic benefit:

- Delayed costs and one-time only non-depreciable expenditures

Step 4. Identify the non-compliance and compliance date, penalty payment date, and other information, as required:

- **Inspection date:** August 15, 2010
- **Non-compliance date:**
 - Waste determination violation: August 15, 2007 (assumed 3 years prior to the inspection date)
 - Training program violation: August 15, 2005 (assumed 5 years prior to the inspection date)
- **Compliance date:** August 31, 2010
- **Payment penalty date:** November 30, 2010
- **Cost estimate date:** June 1, 2010 (assumed)
- **Distance to the TSDF:** > 200 miles but < 500 miles (assumed)

Step 5. Obtain the cost data:

Violations	Costs ¹	References ²
Waste Determination		
• TCLP liquid waste VOCs	\$330	4
• TCLP liquid waste metals	\$279	3
• pH	\$15	5
• Ignitability	\$74	6
Waste Profile	\$810	7
Waste Transportation	\$39	64
Waste Disposal (disposed as secondary fuel)	\$84	37
Training Program Development	\$1,900	85

¹ 2010 costs, Costs per container except for the Training Program Development

² Task numbers on the [U.S. EPA's Cost Table](#)

Waste characterization+ transportation + disposal costs = $$(330+279+15+74+810) + \$39 + \$84 = \$1,631/\text{container}$

Total waste characterization+ transportation + disposal costs = $\$1,631/\text{container} \times 3 \text{ containers} = \$4,893$

Training Program Development = \$1,900

Step 6. Input cost data into BEN:

Enter \$4,893 and \$1,900 into BEN

Result: $\$1,158 + \$513 = \$1,671$

Total economic benefit = \$1,671

Note: The Tax Deductible option was not selected for this calculation. It is important to document which method was utilized.

Example B: Failure to Perform Waste Determination and Illegal Hazardous Waste Disposal

Step 1. Describe the case:

Acme Manufacturing produces belt buckles and is located in City of Industry. On June 1, 2014, the facility started manufacturing a metal alloy buckle. To make the buckle appear be a used, antique buckle, the buckle is washed in a light acidic solution (pH 4.5). The water from the washing process is collected in two 55-gallon containers and is reused. Every three months the facility changed out the containers. Acme explored the possibility of discharging discarded buckle washing solution to the Publicly Owned Treatment Works (POTW). The facility determined that it would be too expensive due to the fact this was the only waste stream generated by the facility that would be treated and discharged to POTW. Waste Extraction Test (WET) performed when the process was first started found that the discharged wash solution had a pH of 6.1, total chromium of 5.3 mg/L, and total iron of 75 mg/L. The waste was profiled by the company and the broker as non-Resource Conservation and Recovery Act (RCRA) HW. The facility is a LQG. Every 3 months the spent belt buckle wash waste is shipped off-site. The waste is shipped to a transfer station out-of-state where the waste is reclassified as non-HW, then shipped to a landfill out-of-state, 270 miles from the facility where the solution is used for dust control. The spent wash water disposal cost for the company including shipping is \$1.15/gallon.

Inspection of the facility performed on September 30 substantiated the above information. Split samples of the wastewater were obtained and analyzed for RCRA metals and pH. The results found the pH to be 5.9, total chromium to be 5.4 mg/L and total solids to be less than 0.5% as reported as dry solids. Therefore total chromium is equated to TCLP chromium.

On October 15, 2016, DTSC determined that the spent wash water was RCRA HW because the concentration of the total chromium exceeded the maximum concentration for the TCLP (5 mg/L) and immediately notified the facility of its findings. The facility was cited for waste determination violation and improper disposal of HW. No other spent wash waste was sent to a landfill after the notification. Penalty payment was made on January 15, 2017.

Step 2. Identify activities resulting in economic benefit:

- Failure to perform waste determination properly; and
- Illegal transportation and disposal of HW

Step 3. Determine the components and categories of the economic benefit:

- Avoided costs and one-time only non-depreciable expenditures

Step 4. Identify the non-compliance and compliance date, penalty payment date, and other information, as required:

- **Inspection date:** September 30, 2016
- **Non-compliance date:** September 1, 2014
- **Compliance date:** October 15, 2016
- **Payment penalty date:** January 15, 2017
- **Cost estimate date** (assumed): June 1, 2016
- **Distance to the TSDF:** > 200 miles but < 500 miles
- **Number of the shipments:** Nine shipments of two 55-gallon containers of spent solutions should have been sent to the landfill out-of-state from September 1, 2014 to September 1, 2016 (every three months)

Step 5. Obtain the cost data:

Violations	Costs ¹	References ²
Waste Determination	\$309	3
Waste Transportation	\$43	64
Waste Disposal	\$277	41

¹ 2016 costs adjusted for inflation using [US Inflation Calculator](#), Costs per container except for the waste determination

² Task numbers on the [U.S. EPA's Cost Table](#)

Waste transportation cost = \$43/container x 2 containers/shipment = \$86/shipment
Waste disposal cost = \$277/container x 2 containers/shipment = \$554/shipment
Total waste transportation + disposal costs = \$(86 + 554)/shipment x 9 shipments = \$5,760

Step 6. Input cost data into BEN:

Enter \$309 and \$5,760 into BEN
Result: \$398 + \$7,336 = \$7,734

Yuma shipment and disposal costs = \$1.15/gallon x 55 gallon/container x 2 containers/shipment x 9 shipments = \$1,139

Total economic benefit = \$7,734 - \$1,139 = \$6,595

Note: The result may be different if separate runs are created for each of the nine shipments instead of calculating one lump sum. The Tax Deductible option was not selected for this calculation. It is important to document which method was utilized.

Example C: Illegal Hazardous Waste Storage

Step 1. Describe the case:

XYZ is registered with DTSC to transport HW. XYZ's current business activities involve the remediation and transportation of lead debris which is RCRA HW, asbestos which is non-RCRA HW, and non-RCRA solvent waste. XYZ operates two 40-yard roll-off bins and uses two tractors and two 16 foot box vans to transport HW. It employs four drivers with commercial licenses with hazardous materials (HazMat) endorsements.

DTSC cited XYZ for storing HW without a permit or authorization. As a registered HW transporter, XYZ is subject to storage requirements in HSC section 25201(a) but it failed to meet conditions for an exempt transfer facility by transporting HW to their facility and holding it for more than ten days. DTSC identified 71 HW manifests that indicated XYZ stored HW for more than ten days.

At the time of the inspection, there was no waste on-site stored for longer than ten days. DTSC determined that XYZ stored waste on-site in violation of the requirement for 499 days. Penalty payment was made on January 6, 2011.

Step 2. Identify activities resulting in economic benefit:

- Storage of HW without a permit or authorization that includes failure to transport HW to and dispose at the TSDf as often as required

Step 3. Determine the components and categories of the economic benefit:

- Delayed costs and one-time only non-depreciable expenditures

Step 4. Identify the non-compliance and compliance date, penalty payment date, and other information, as required:

- **Inspection date:** August 9, 2010
- **Non-compliance date:** March 29, 2009 (assumed by subtracting 499 days from the inspection date)
- **Compliance date:** August 9, 2010 (assumed same as the inspection date)
- **Payment penalty date:** January 6, 2011
- **Cost estimate date:** August 9, 2010 (assumed same as the inspection date)

Step 5. Obtain the cost data:

In this case, as the facility may not have to hire commercial hauler or pay the commercial hauler rates the U.S. EPA's cost Table or U.S. EPA guidance document would not be appropriate to obtain the cost data. Transportation and disposal costs should be estimated at staff's discretion using different resources.

Violations	Costs	References
Waste Transportation	\$130/2-hour round trip ¹	Department of Industrial Relations
Waste Disposal		
• RCRA Lead	\$240/drum ²	Third-party TSDF
• Non-RCRA Liquid	\$230/drum ²	Third-party TSDF
• Asbestos	\$36/yard ²	Third-party TSDF

¹ Cost estimated using the [prevailing wages](#) provided by the [Department of Industrial Relations](#)

² Costs quoted by third party

Total waste transportation cost = \$6,240

Total waste disposal cost = \$11,604

Total waste transportation + disposal costs = \$(6,240 + 11,604) = \$17,844

Step 6. Input cost data into BEN:

Enter \$17,844 into BEN

Result: \$1,012

Total economic benefit = \$1,012

Note: The result may be different if separate runs are created for each of the 71 manifests because they may have different dates of non-compliance and delayed cost. In this example economic benefit was calculated by combining the total days of non-compliance. The Tax Deductible option was not selected for this calculation. It is important to document which method was utilized.