(公 3-02)

輸送貨物の事故情報に関するデータベース

報 告 書

2023 年 3 月 31 日

一般社団法人　日本海事検定協会

NIPPON KAIJI KENTEI (MALAYSIA) SDN. BHD.

NKKK (TAIWAN), LTD.

NIPPON KAIJI KENTEI (THAILAND) LIMITED

NIPPON KAIJI KENTEI MYANMAR LIMITED

I. マレーシア向け輸送貨物の事故情報に関するデータベース

（NIPPON KAIJI KENTEI (MALAYSIA) SDN. BHD.）

II. 損害貨物のデータベース（海外）

（NKKK (TAIWAN), LTD.）

III. DATABASE OF DAMAGE CARGO (Data Analysis of 2022)

（NIPPON KAIJI KENTEI (THAILAND) LIMITED）

IV. DATABASE OF DAMAGE CARGO (Data Analysis of 2020~2022)

（NIPPON KAIJI KENTEI MYANMAR LIMITED）

（公 3-02）

マレーシア向け
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1. 目的

本データベースは、マレーシア国内に輸送された貨物で、過去発生した事故情報を収集・整理し、事故貨物の種類、事故の特徴・傾向、事故品の原因等について分析したものである。

2，対象データ

本データベースのデータは、第三者検査機関としての業務を通じて当協会が蓄積した貨物損害事故事例に関するデータを整理・分析したものであり、2017-2022 年（2017 年 1 月 1 日-2022 年 12 月 31 日）の 6 年間マレーシア国内で収集した下記データが対象である。但し、輸入量が少なく、輸入者が特定される可能性がある貨物は除外した。

なお、本データベースは、上記の条件の下で収集したデータで構成されているものであるため、輸入貨物および国内輸送貨物事故の全ての情報を扱っているものではなく、あくまで参考値として取り扱って頂く必要がある。

3．データの分類

貨物データは、それぞれ下記のカテゴリーに分類した。

輸送手段：
- 船舶
- 航空機
- トラック

貨物分類：
- 鋼材、鉄鋼製品（非鉄鉄鋼製品含む）
- 原料・素材
- 電子・精密機械
- 産業機械・機械部品
- レジン・プラスティック製品
- 石油、ケミカル類
- 食品
- 車輌
- 医療品
- 野菜・青果物

事故発生場所：
- コンテナ積み下ろし作業中
- 保管中
- 積替中
- 陸上輸送中
- 本船積み下ろし作業中
- 海上輸送中

損害形態：　破損・曲損・凹損・変形
清水濡れ
錆損
汚損
抜荷・窃盗
腐敗、劣化
漏れ損
異物混入
カビ損
焼損
汗濡れ
欠損
オフスペック
酸化

処理方法：　廃棄
ノークレーム
再販売
修理・復旧
格落ち販売

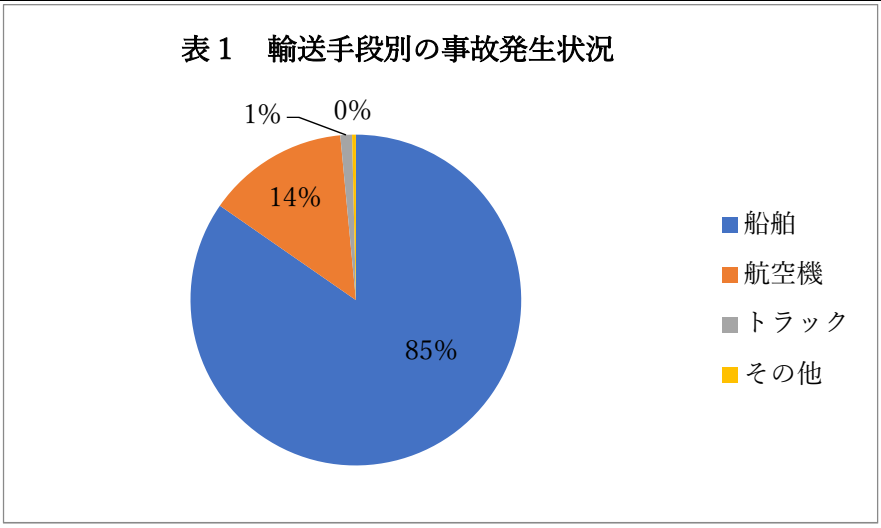
事故原因：　ラフハンドリング
保管不良
梱包不良
固縛不良
コンテナ損傷・故障
積付・積載不良
船舶設備不良
機器設定ミス
荒天
洪水
温度・湿度変化
盗難

4．調査内容

4 －1. 輸送手段別の事故発生状況

	2017 年	2018 年	2019 年	2020 年	2021 年	2022 年	2023 年	合計
船舶	90%	82%	89%	77%	76%	81%	85%	85%
航空機	8%	16%	10%	21%	23%	19%	14%	14%
トラック	1%	2%	1%	1%	1%	0%	1%	1%
その他	1%	0%	0%	1%	0%	0%	0%	0%
合計	100%	100%	100%	100%	100%	100%	100%	100%

表 1　輸送手段別の事故発生状況



4 －2. 年別の損傷貨物状況

	2017 年	2018 年	2019 年	2020 年	2021 年	2022 年
鋼材、鉄鋼製品（非鉄鉄鋼製品含む）	73%	53%	50%	18%	21%	6%
原料・素材	9%	11%	13%	11%	1%	4%
電子・精密機械	7%	17%	13%	20%	17%	15%
産業機械・機械部品	6%	4%	5%	2%	4%	6%
レジン・プラスティック製品	2%	4%	4%	13%	35%	42%
石油、ケミカル類	1%	4%	6%	23%	5%	4%
食品	1%	1%	2%	2%	5%	6%
車輌	0%	1%	1%	4%	0%	6%
医療品	0%	1%	0%	2%	1%	0%
野菜・青果物	0%	0%	0%	0%	2%	2%
その他	1%	3%	4%	6%	8%	11%
合計	100%	100%	100%	100%	100%	100%

表２　年別の損傷貨物状況（2017年）

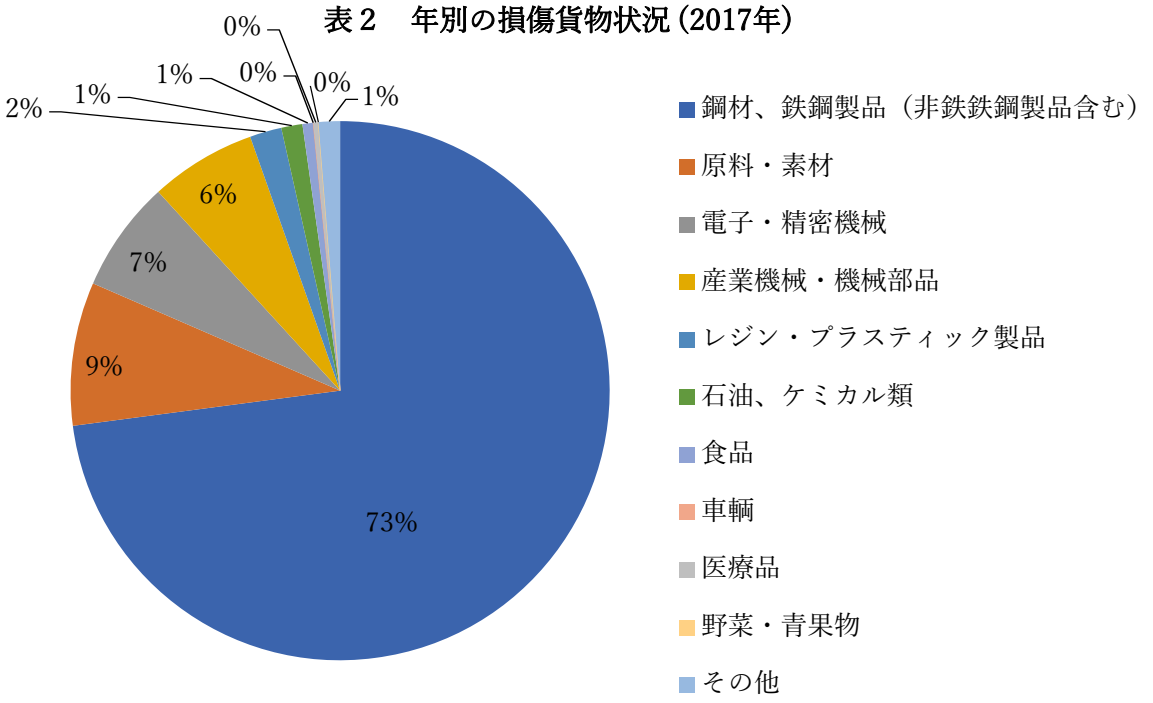


表３　年別の損傷貨物状況（2018年）

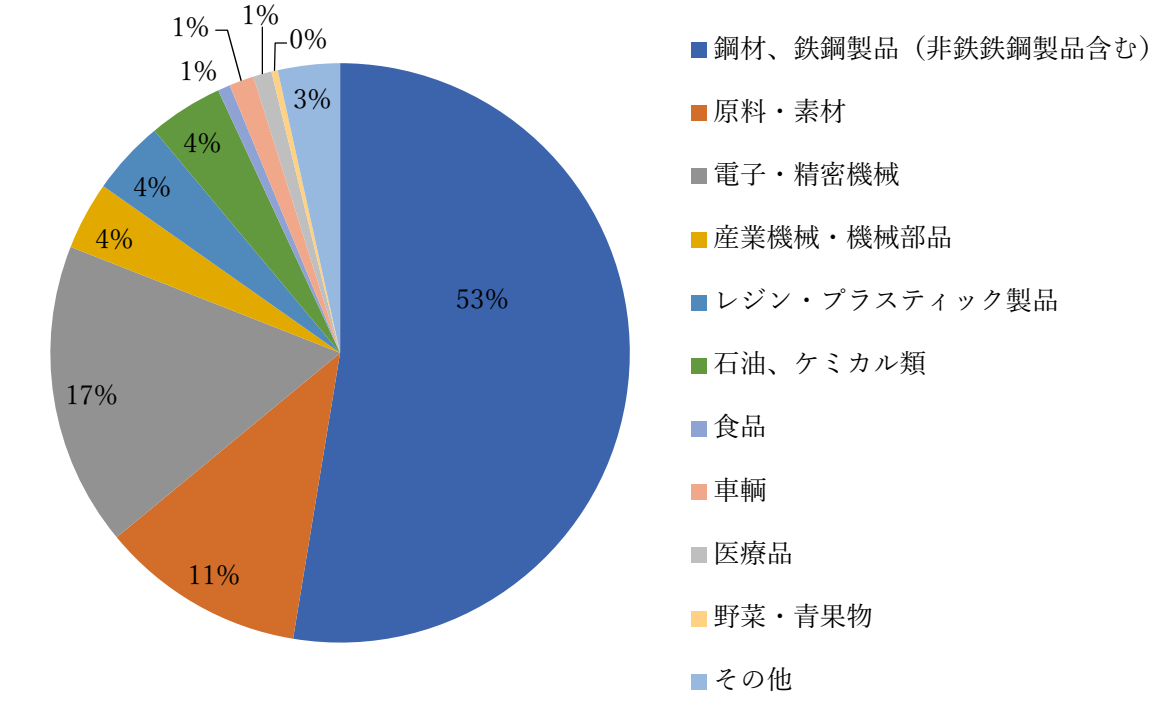


表４　年別の損傷貨物状況（2019年）

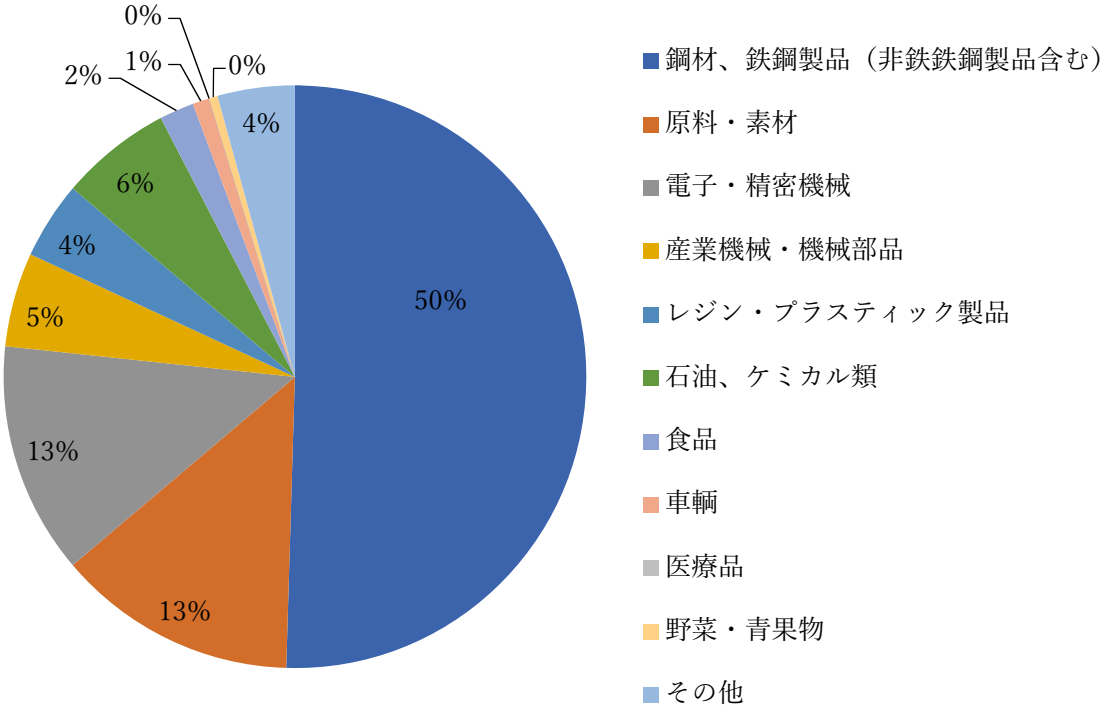


表５　年別の損傷貨物状況（2020年）

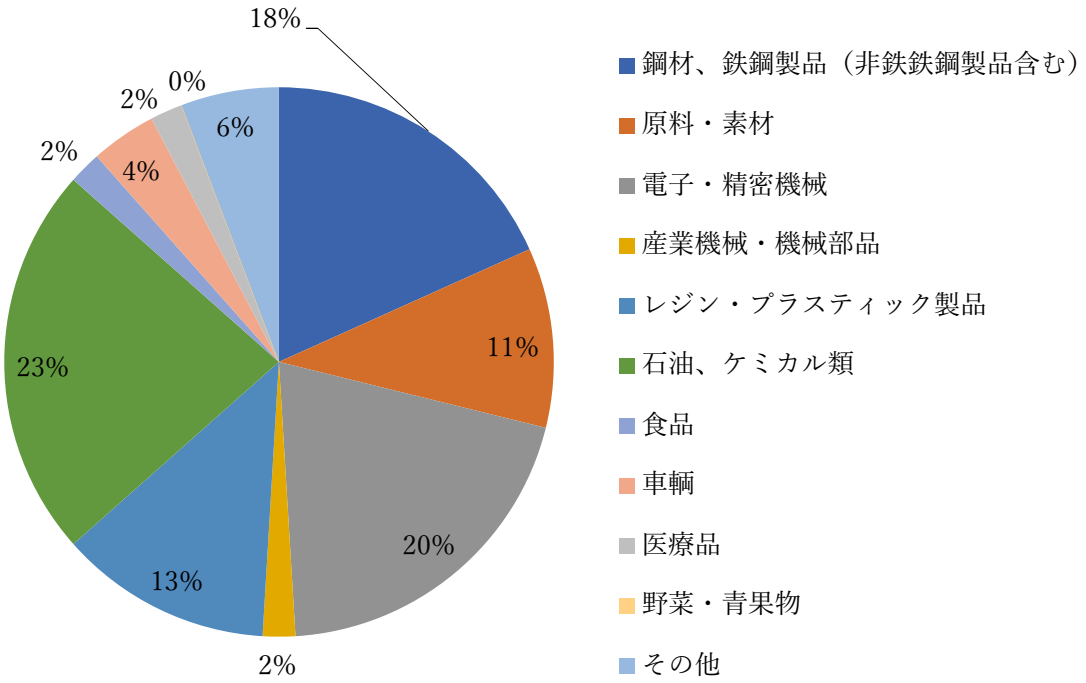


表６　年別の損傷貨物状況（2021年）

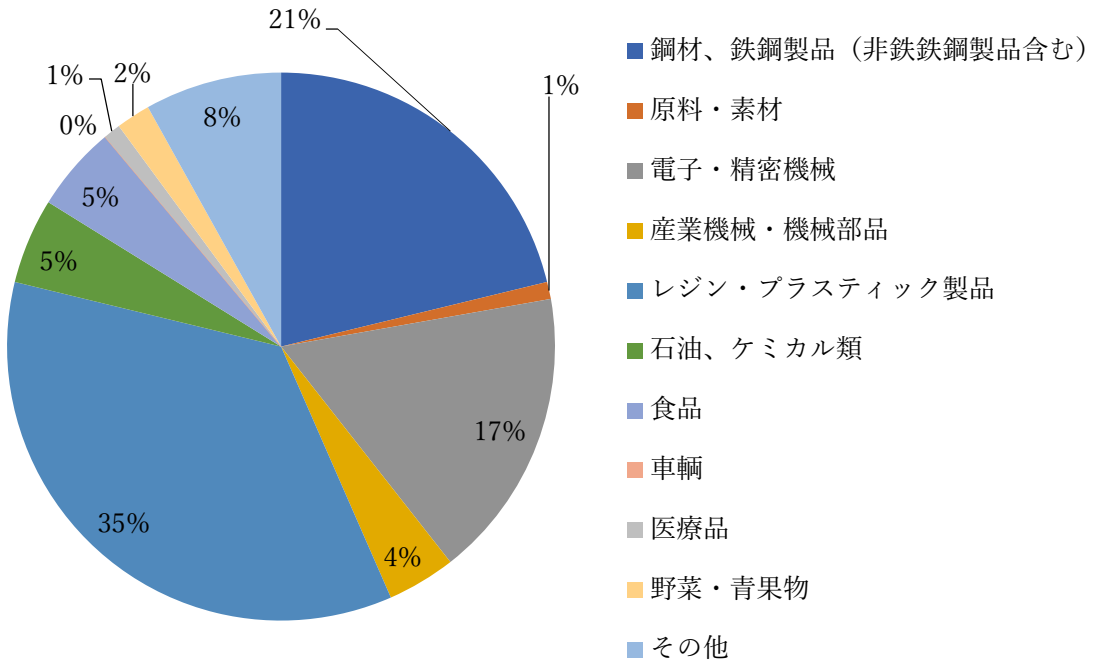
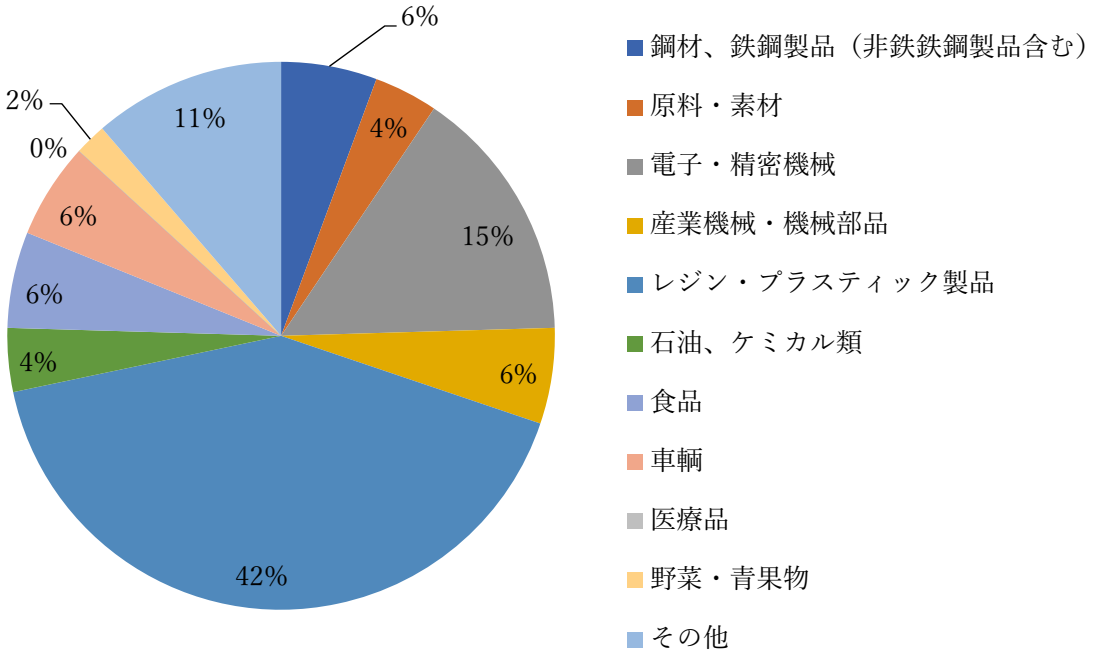


表７　年別の損傷貨物状況（2022年）



4 －3. 貨物種類別の損傷形態、事故発生場所、損害原因および処理方法

4 －3－A. 鋼材、鉄鋼製品（非鉄鉄鋼製品含む）

表８　鋼材、鉄鋼製品の損害形態

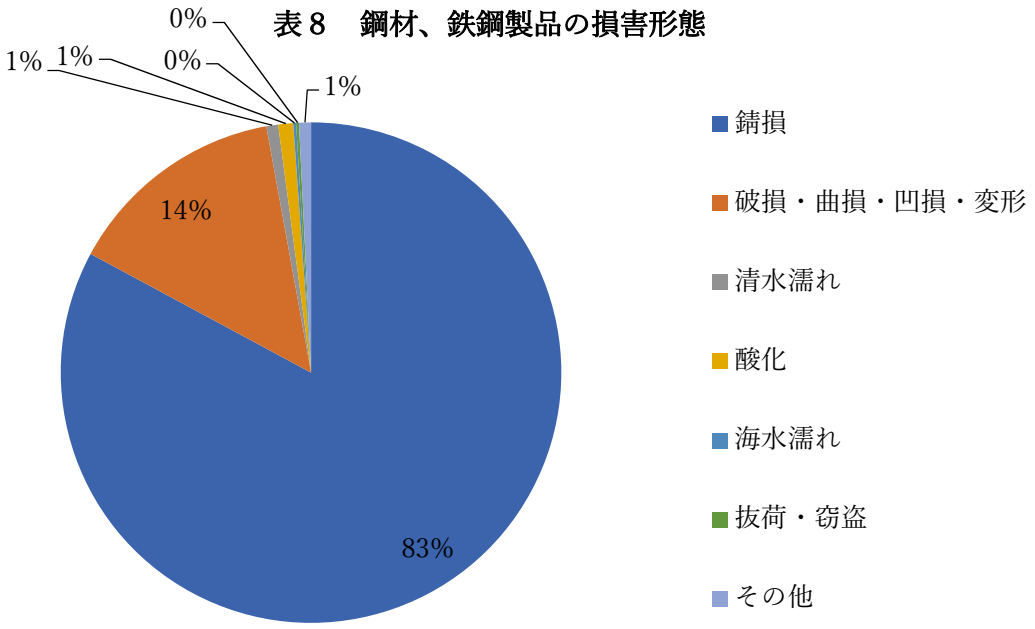


表９　鋼材、鉄鋼製品の損害原因

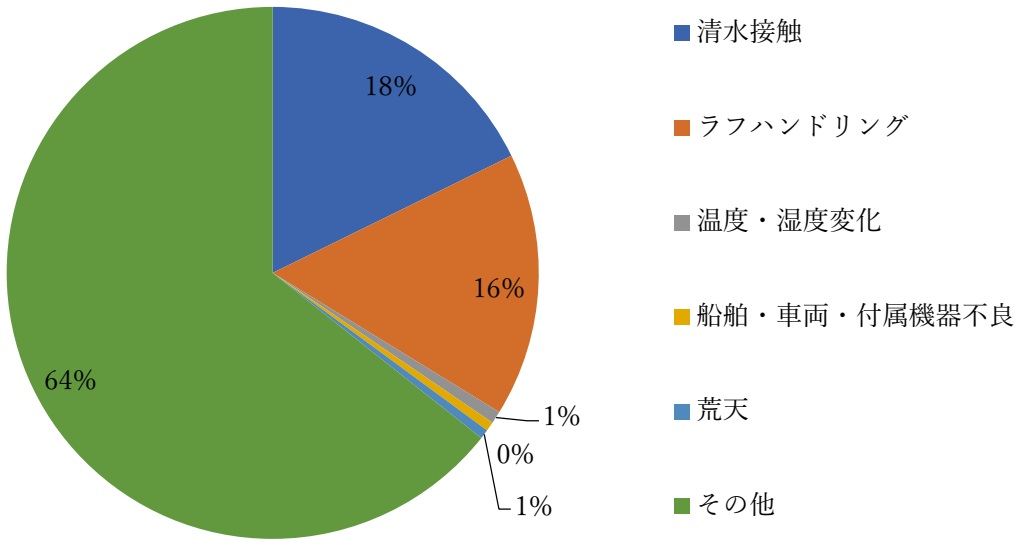


表１０　鋼材鉄鋼製品の事故発生場所

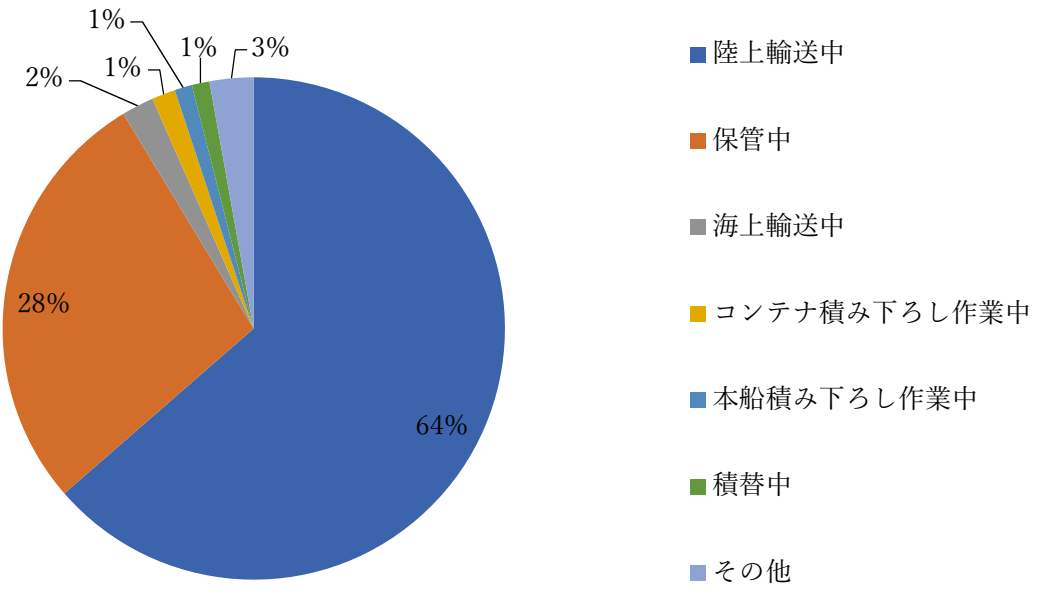
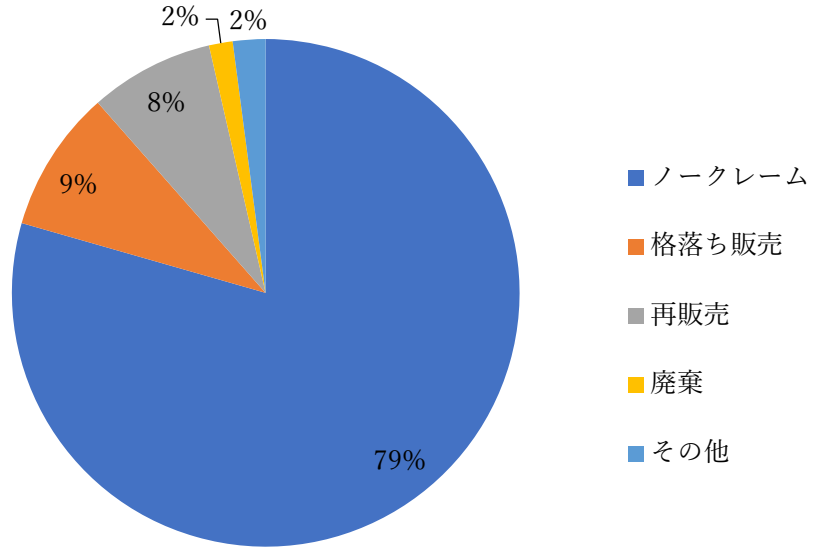


表１１　鋼材、鉄鋼製品の処理方法



4 －3－B. 原料・素材

表１３　原料・素材の事故発生場所

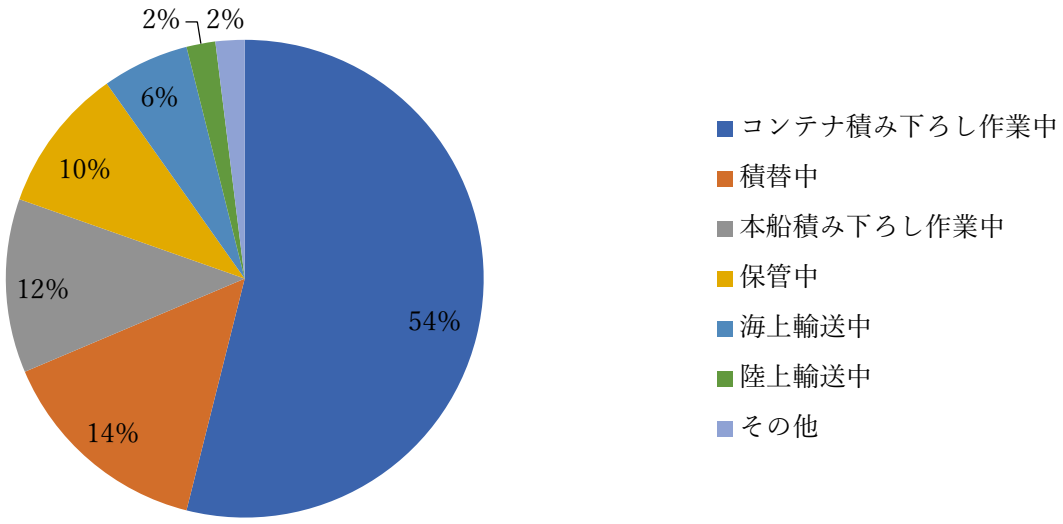


表１２　原料・素材の損害形態

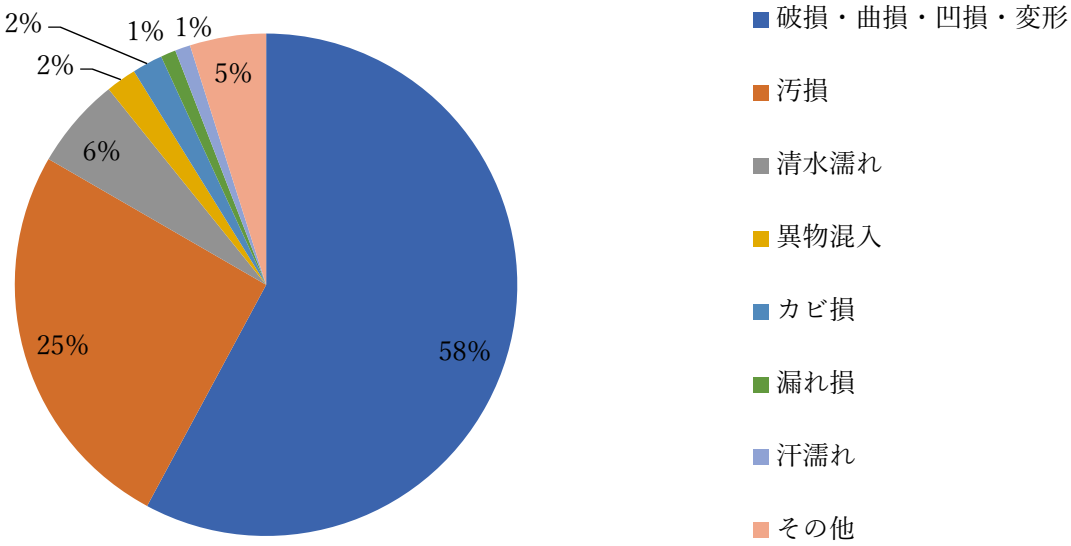


表１４　原料・素材の損害原因

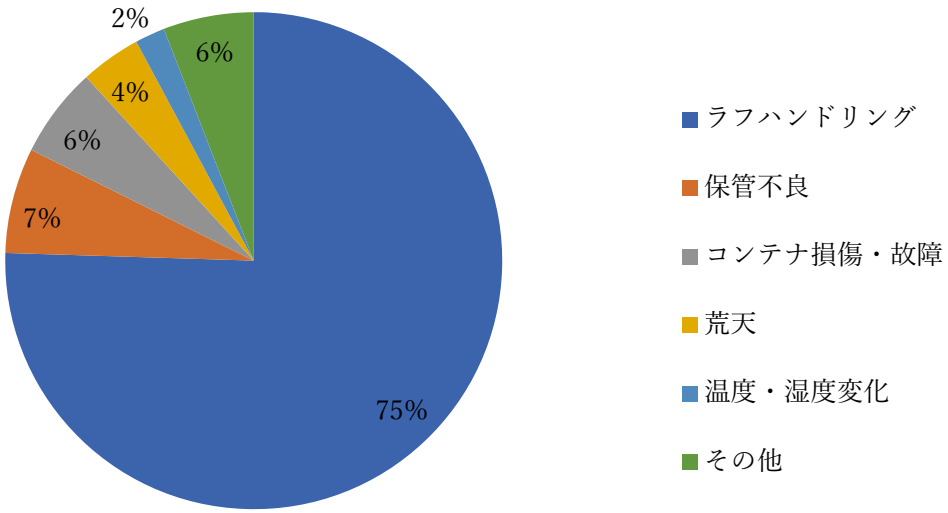
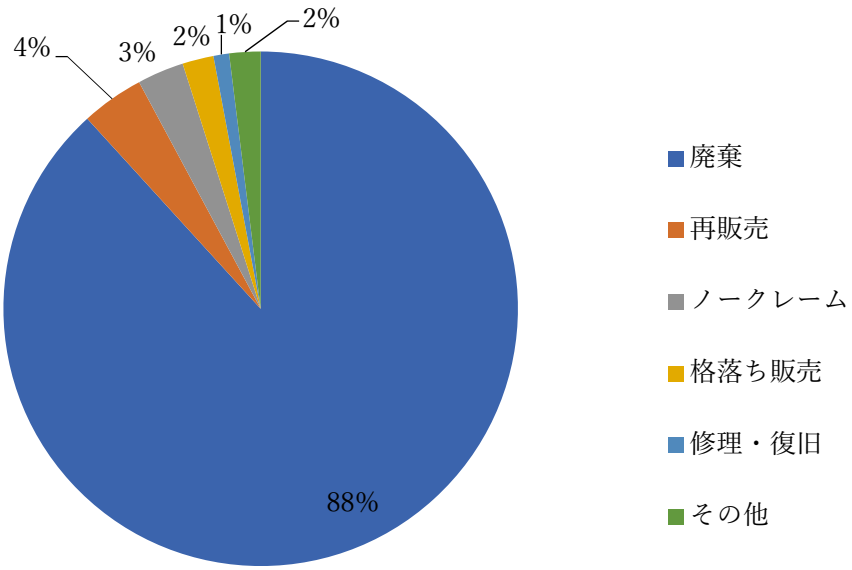


表１５　原料・素材の処理方法



4 －3－C. 電子・精密機械

表１６　電子・精密機械の損害形態

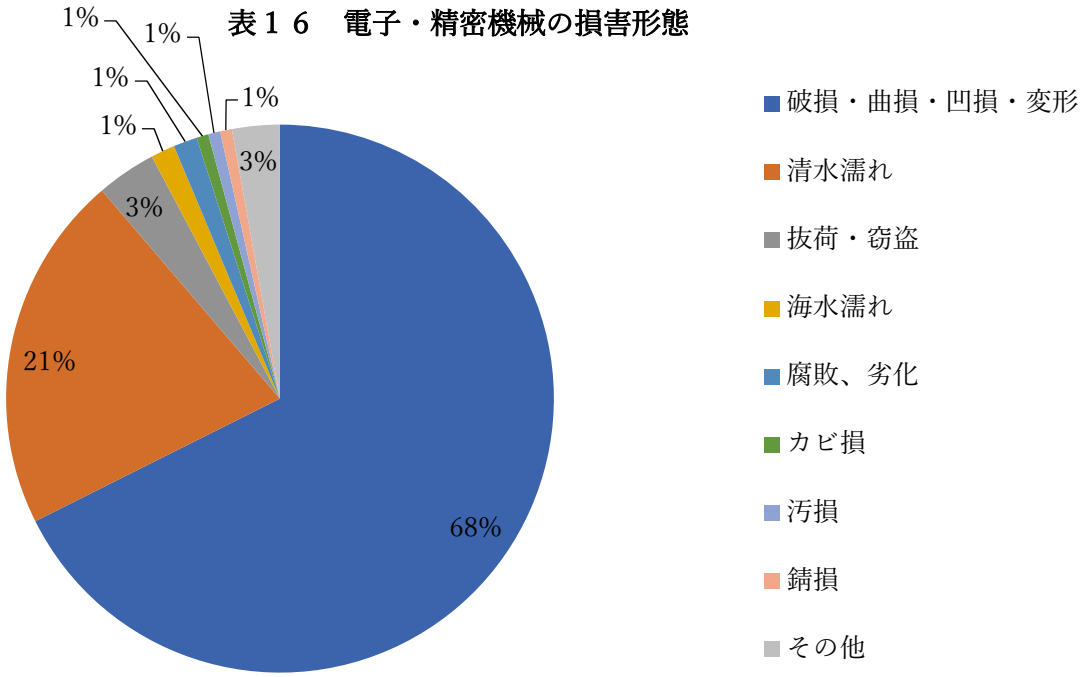


表１７　電子・精密機械の損害原因

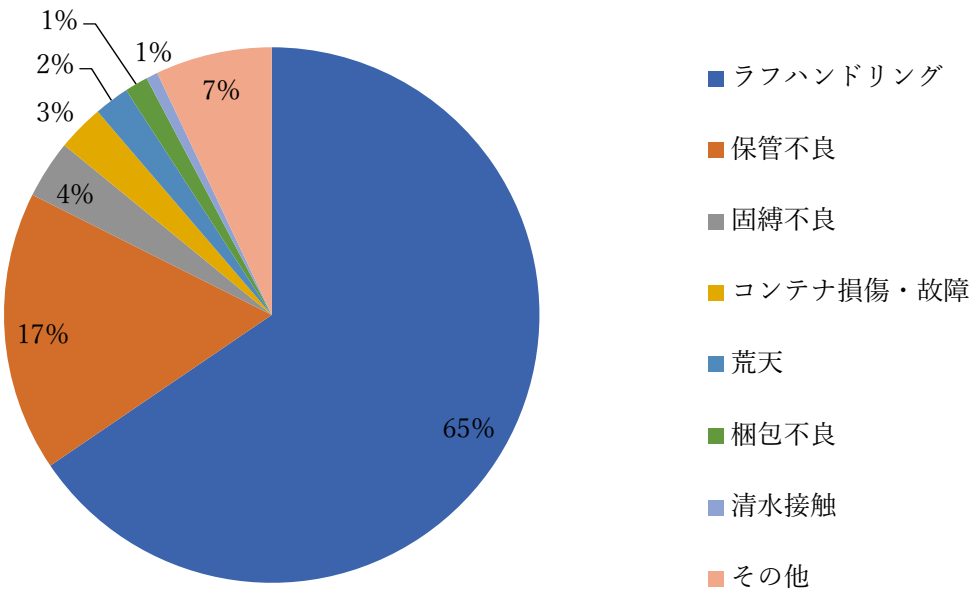


表１８　電子・精密機械の事故発生場所

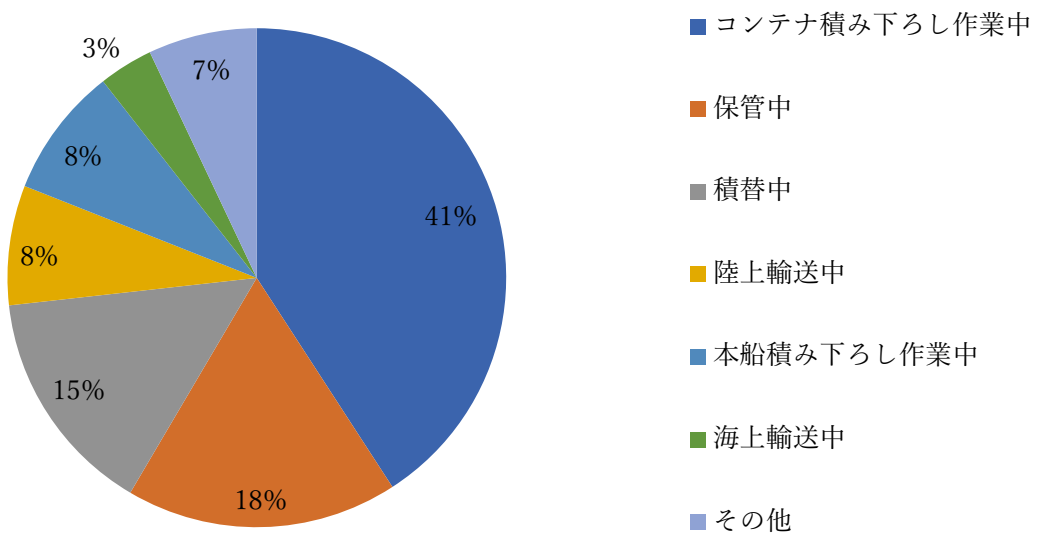
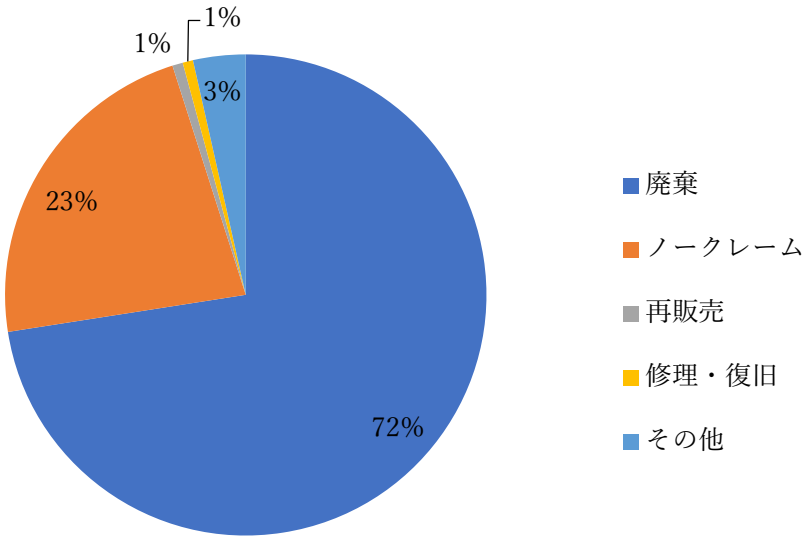


表１９　電子・精密機械の処理方法



4 － 3 －D. 産業機械・機械部品

表２０　産業機械・機械部品の損害形態

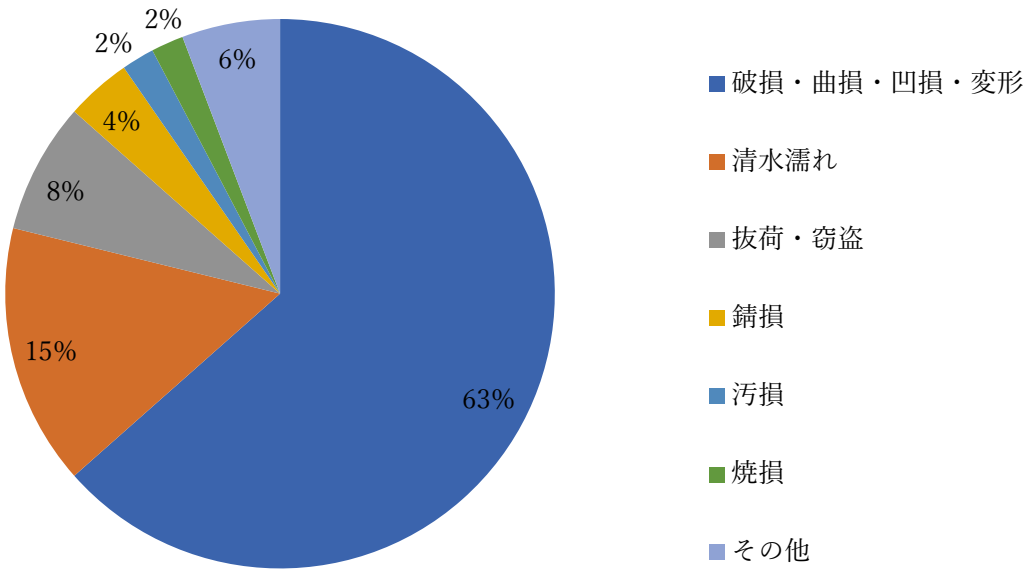


表２１　産業機械・機械部品の損害原因

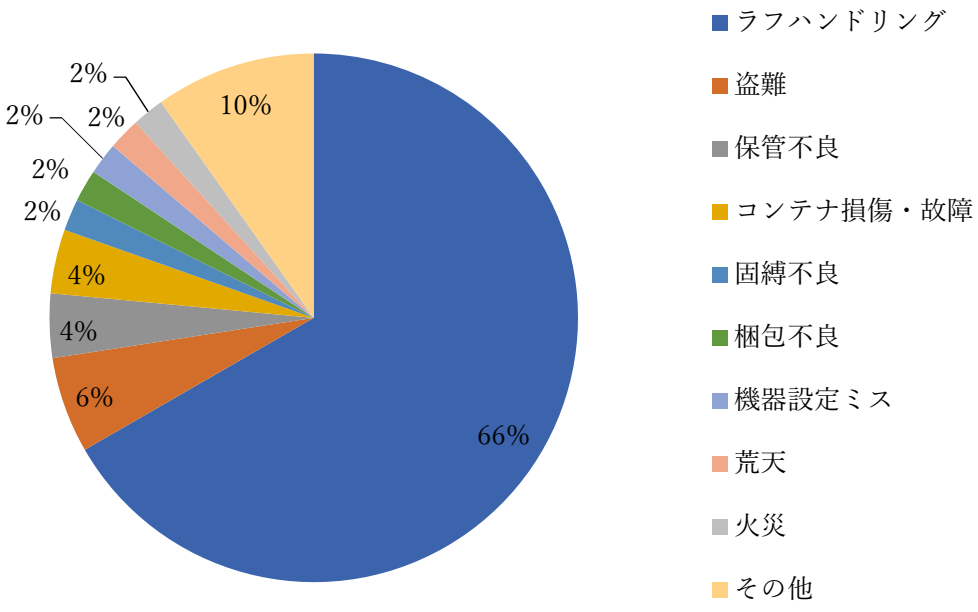


表２２　産業機械・機械部品の事故発生場所

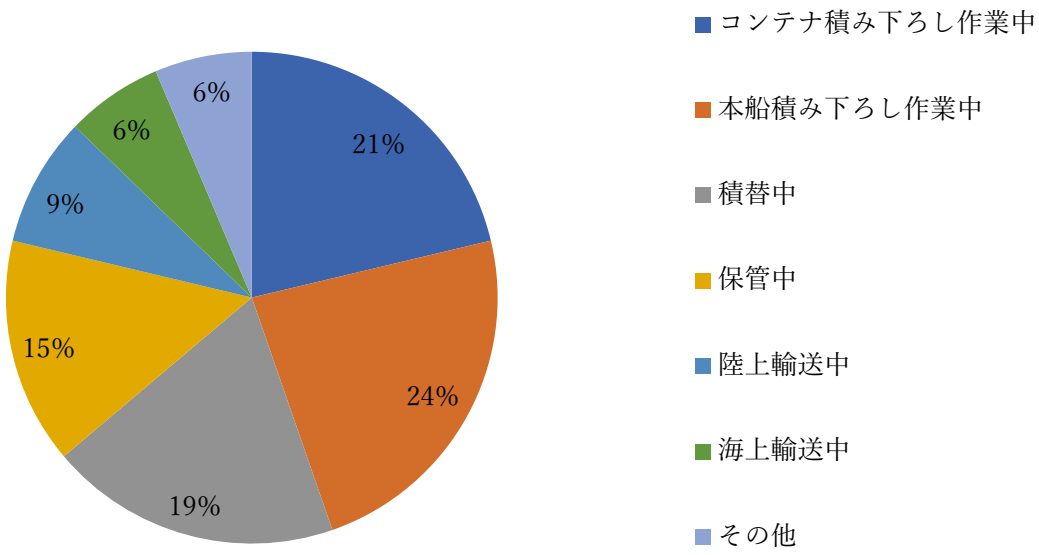
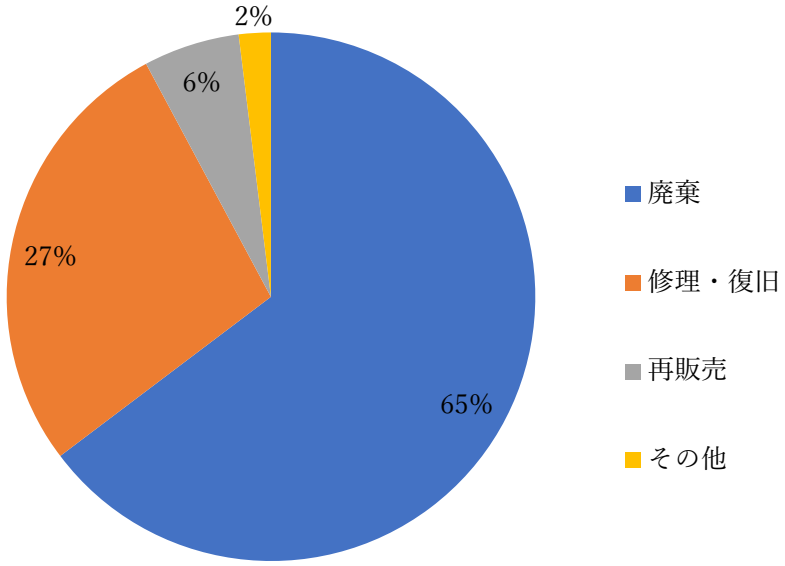


表２３　産業機械・機械部品の処理方法



4－3－E. レジン・プラスティック製品

表２４　レジン・プラスティック製品の損害形態

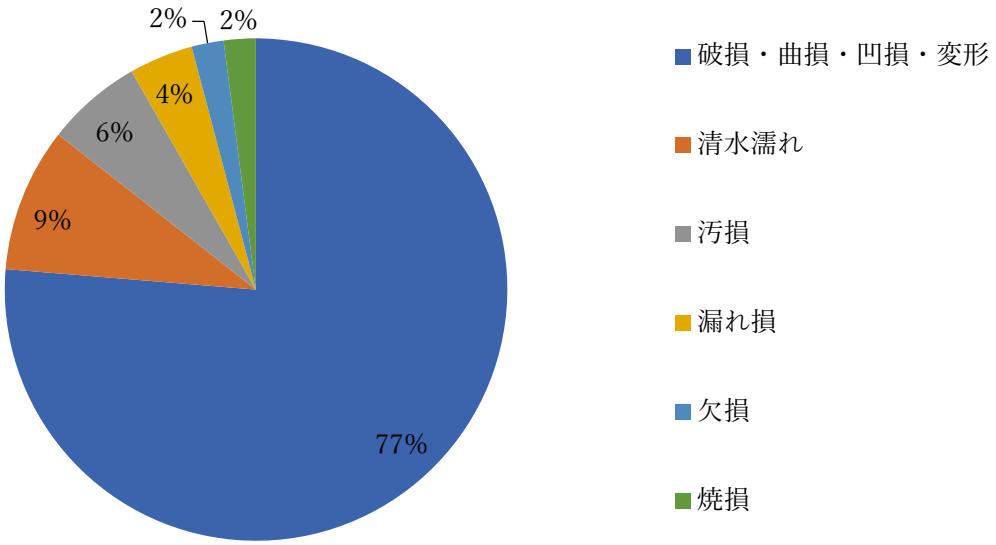


表２５　レジン・プラスティック製品の損害原因

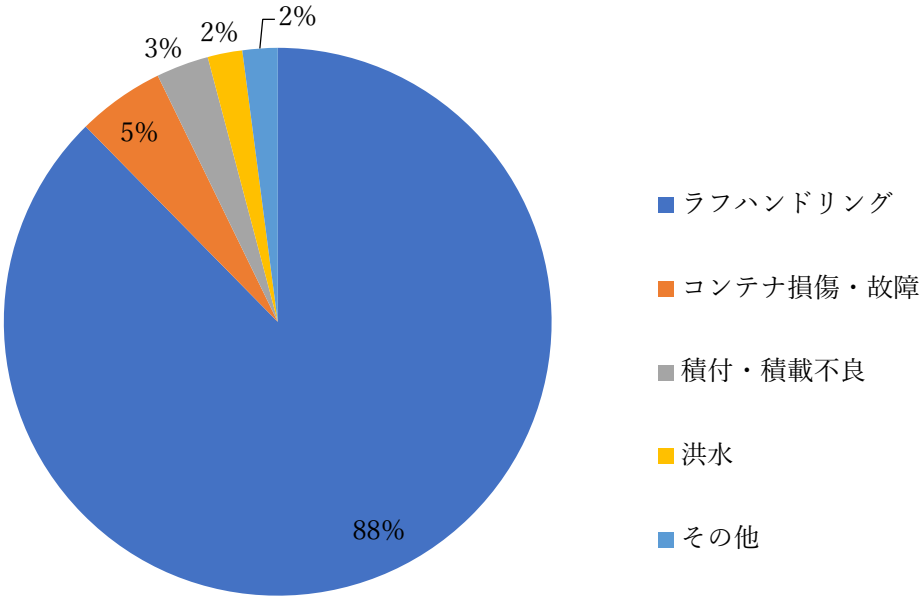


表２６　レジン・プラスティック製品の事故発生場所

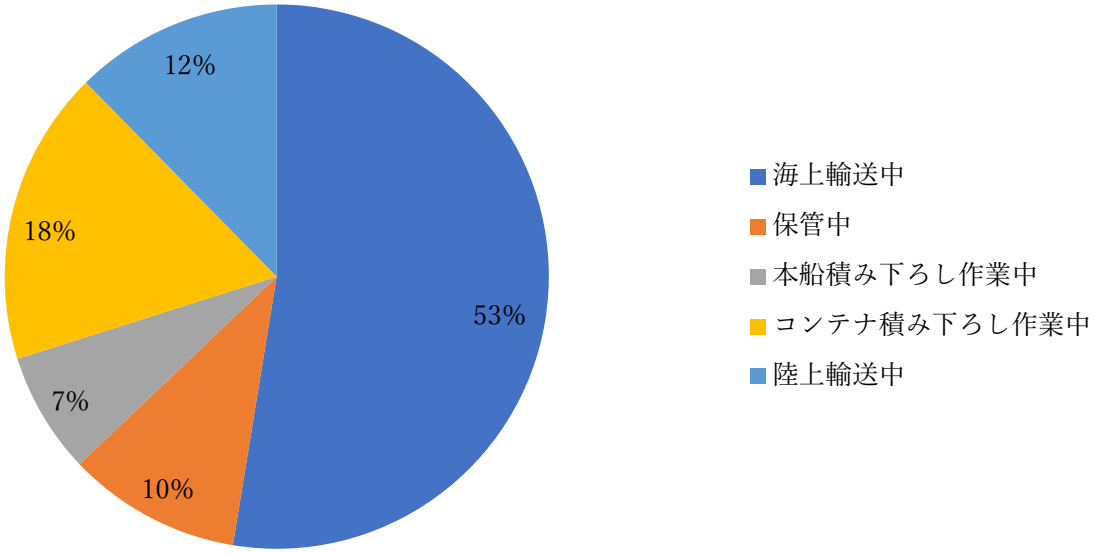
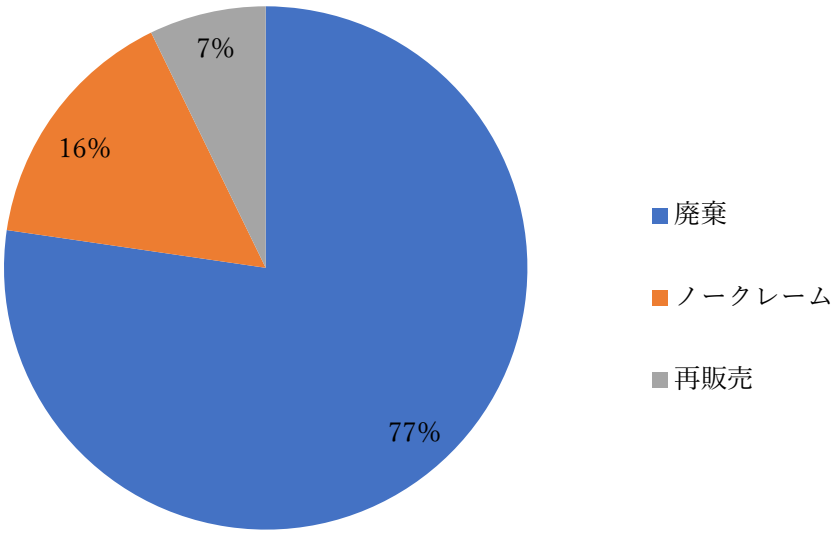


表２７　レジン・プラスティック製品の処理方法



4－3－F. 石油、ケミカル類

表２８　石油、ケミカル類の損害形態

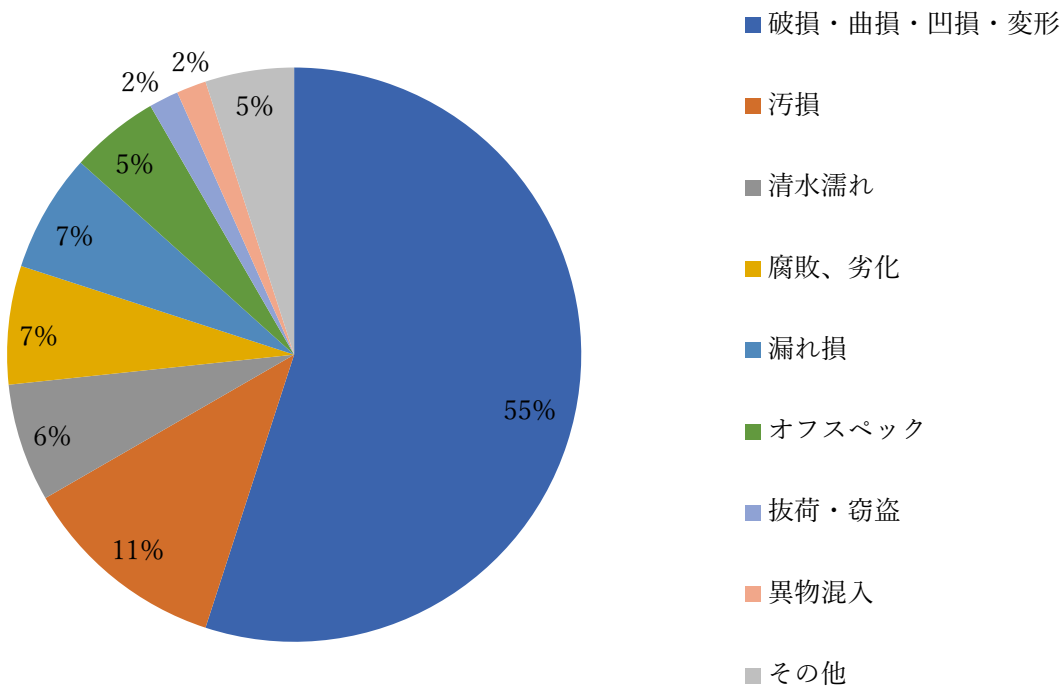


表２９　石油、ケミカル類の損害原因

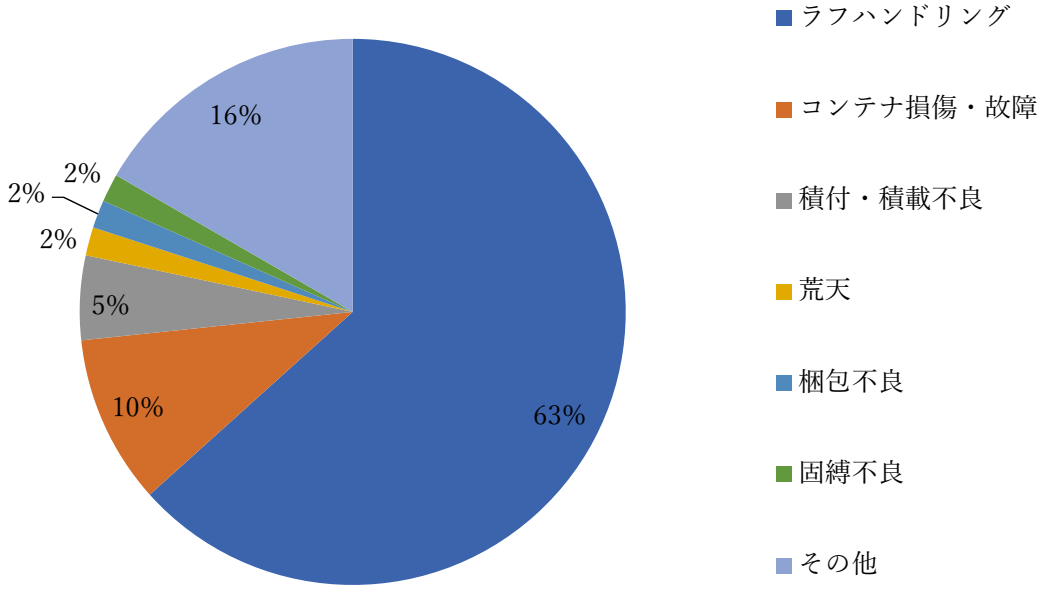


表３０　石油、ケミカル類の事故発生場所

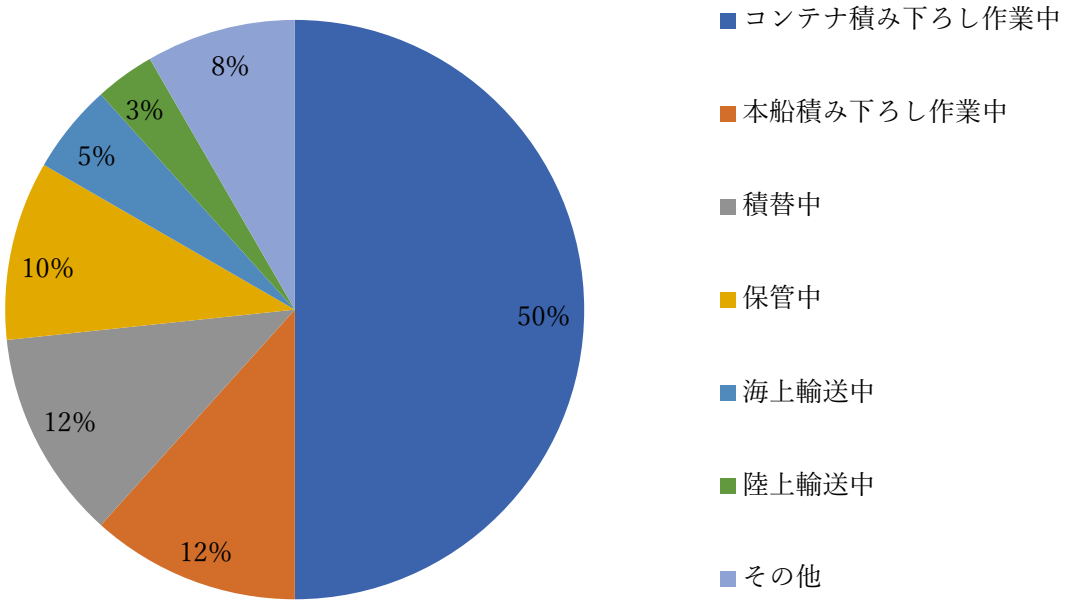
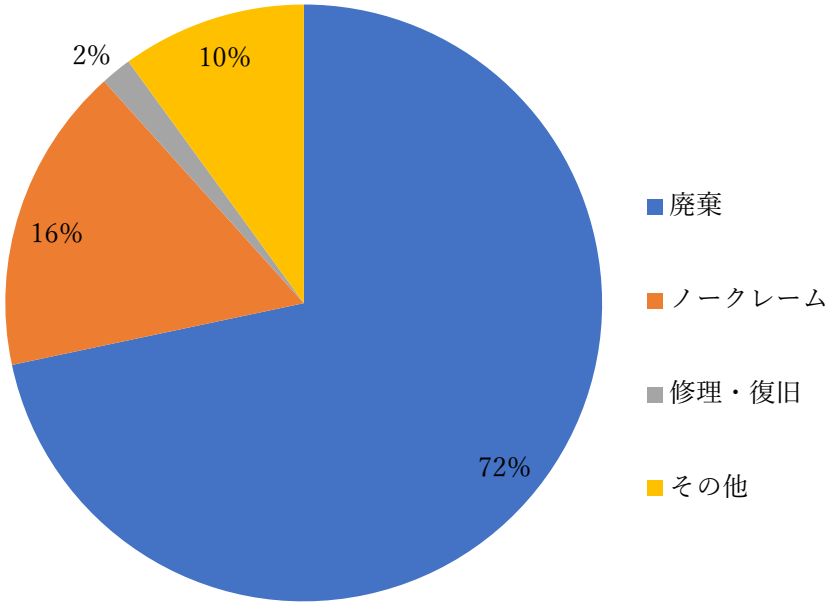


表３１　石油、ケミカル類の処理方法



4 － 3 －G. 食品

表３２　食品の損害形態

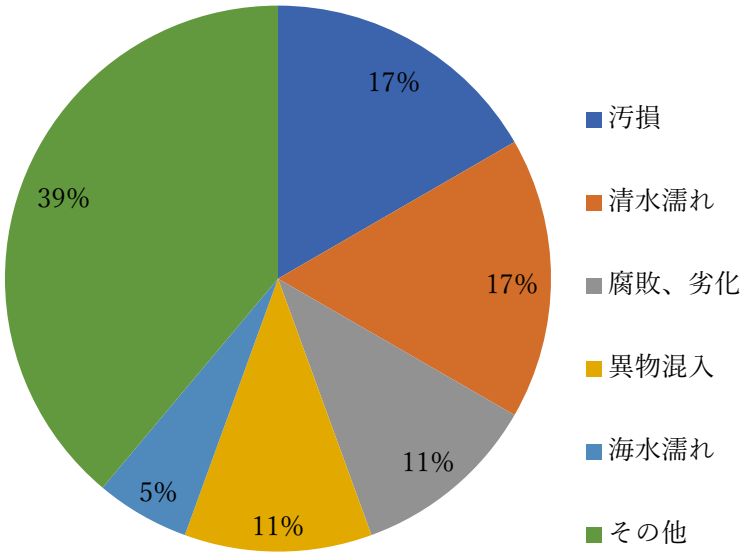


表３３　食品の損害原因

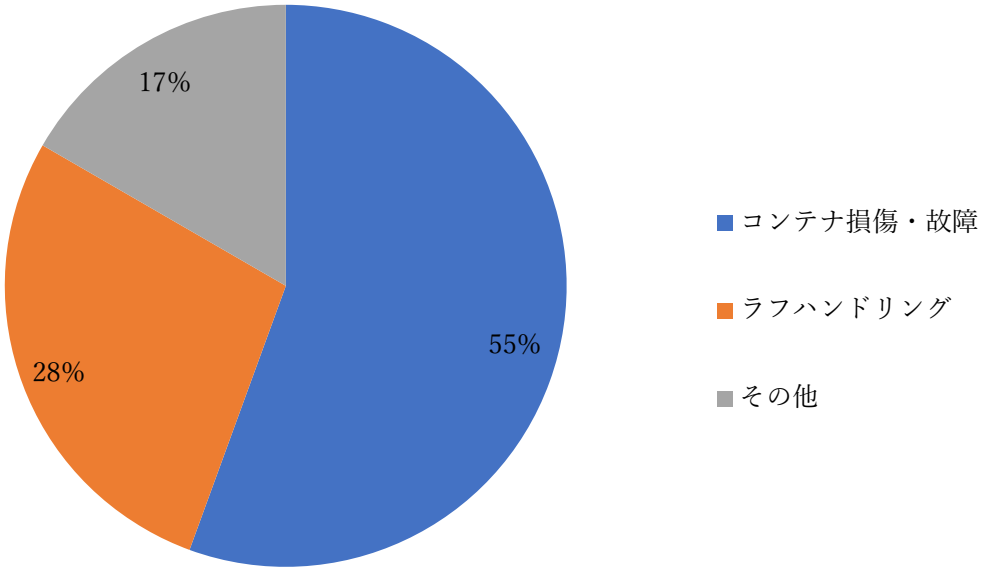


表３４　食品の事故発生場所

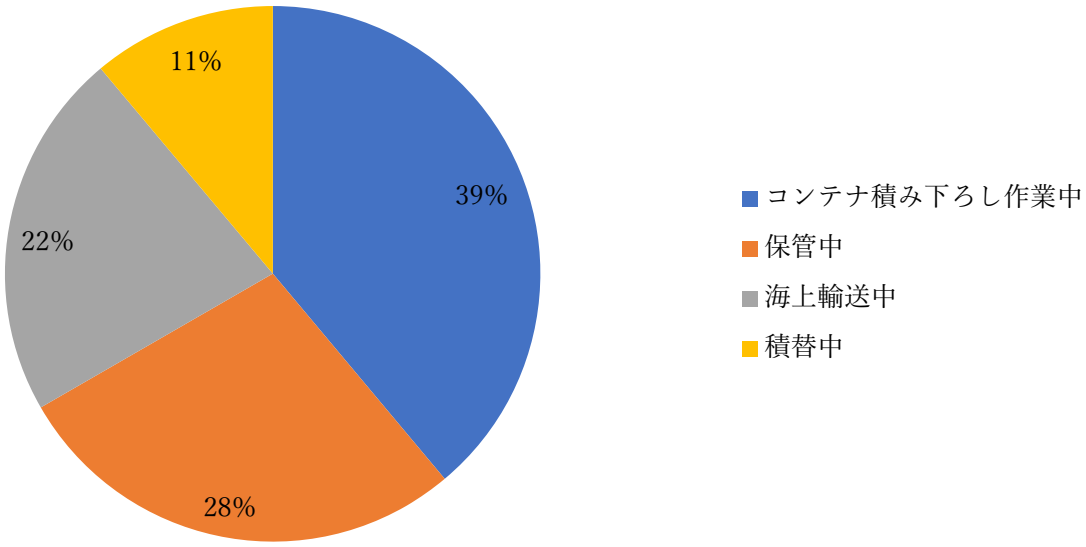
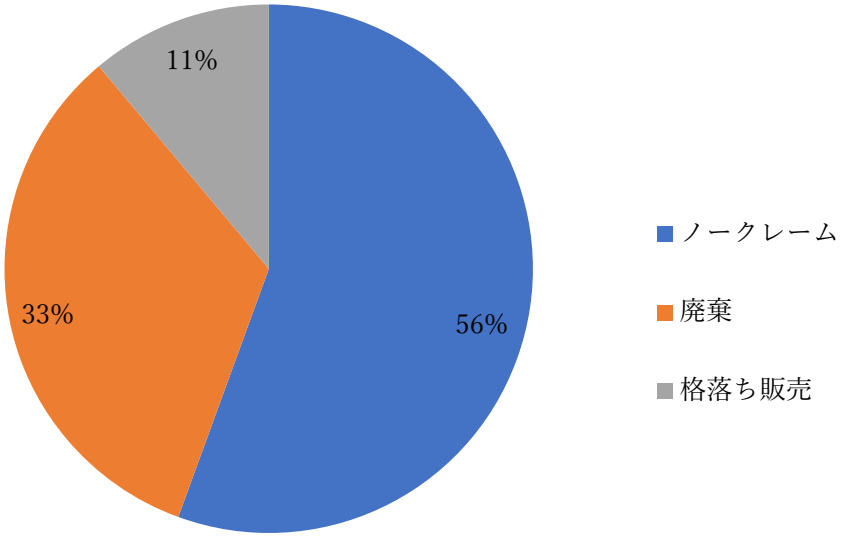


表３５　食品の処理方法



4 － 3 －H. 車輌

表３６　車輌の損害形態

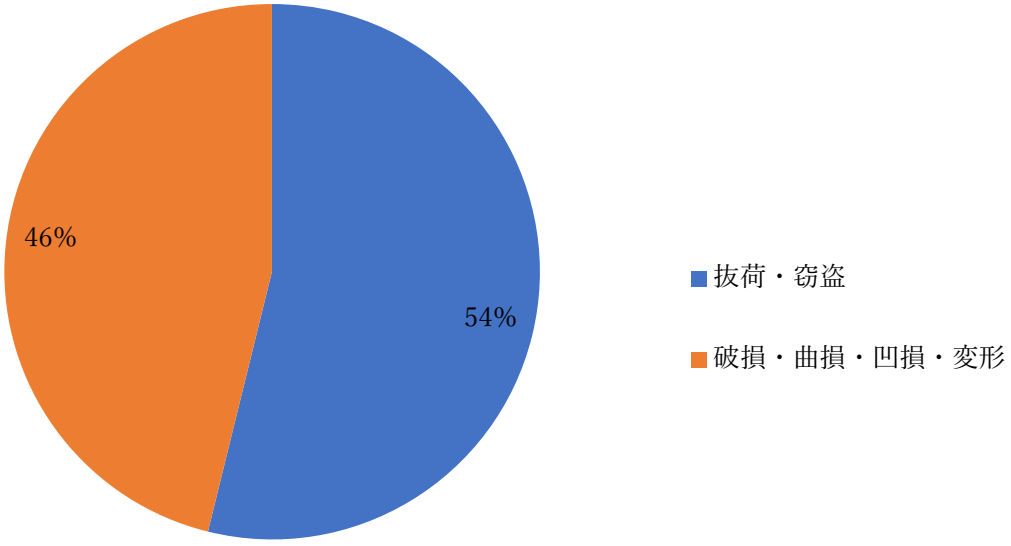


表３７　車輌の損害原因

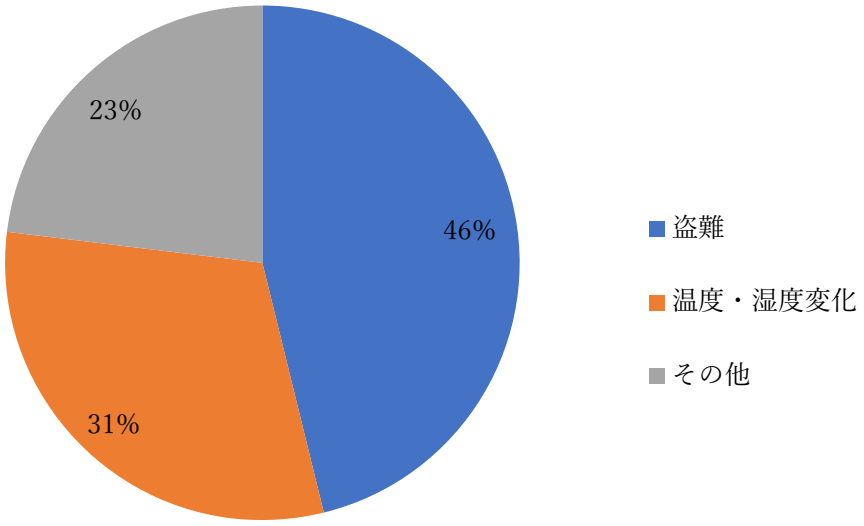


表３８　車輌の事故発生場所

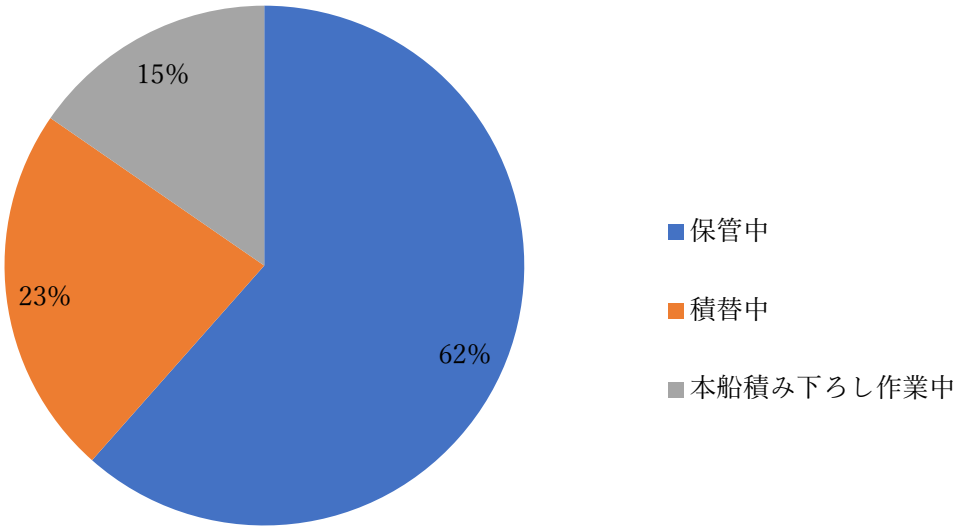
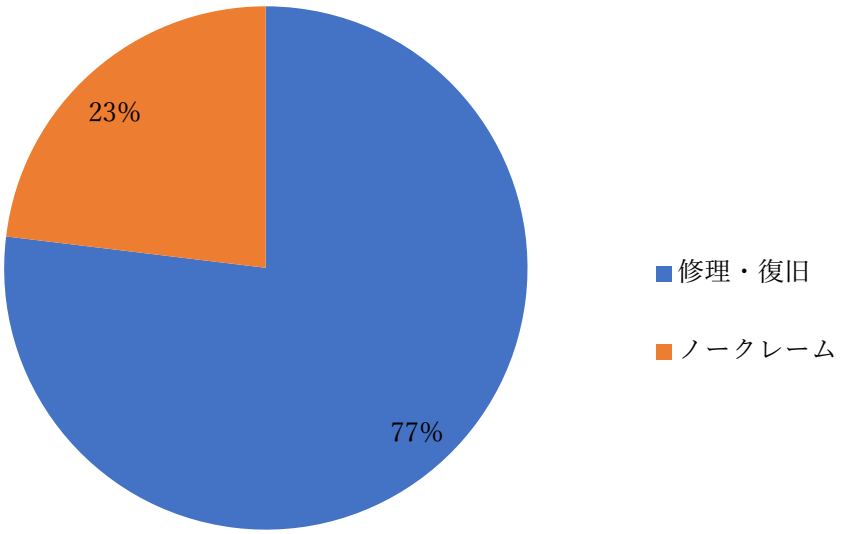


表３９　車輌の処理方法



4 － 3 －I. 医療品

表４０　医療品の損害形態

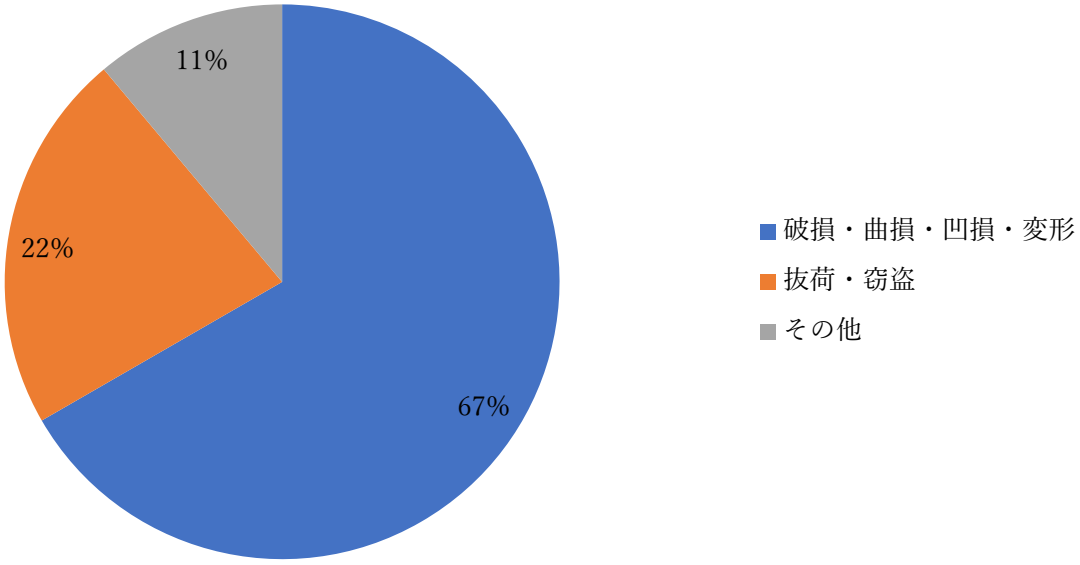


表４１　医療品の損害原因

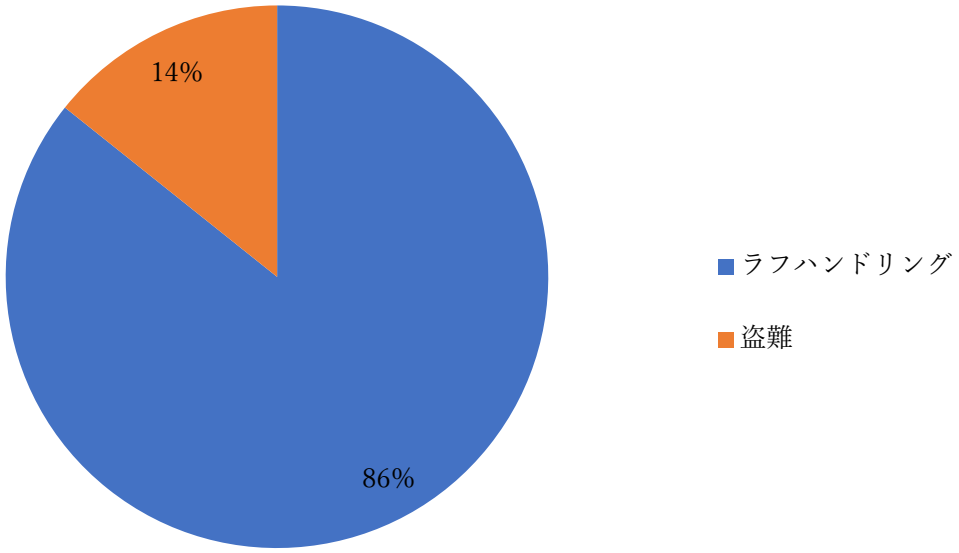


表４２　医療品の事故発生場所

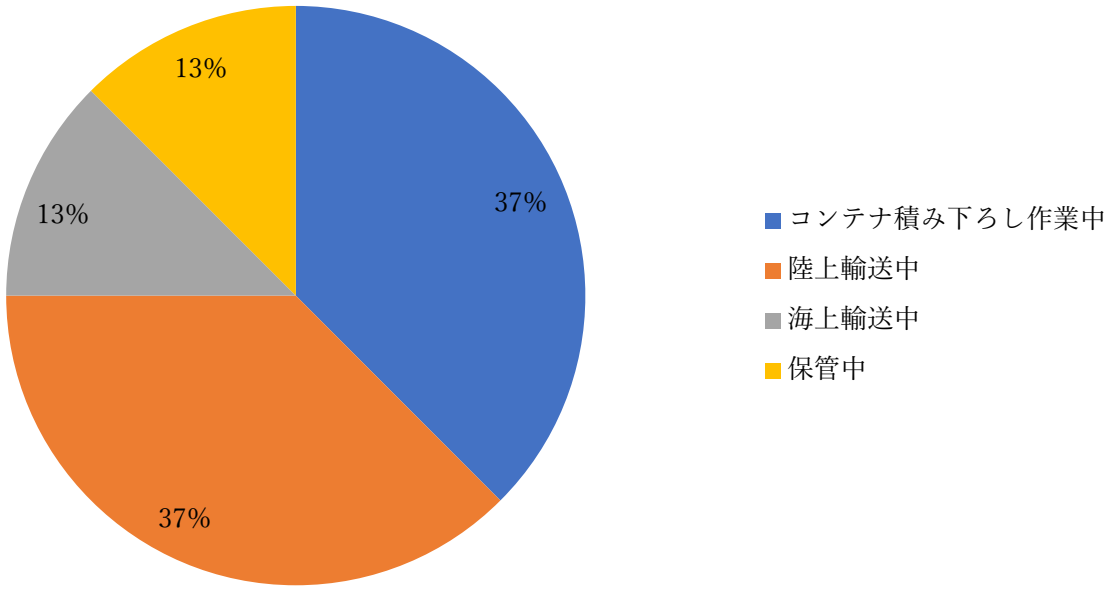
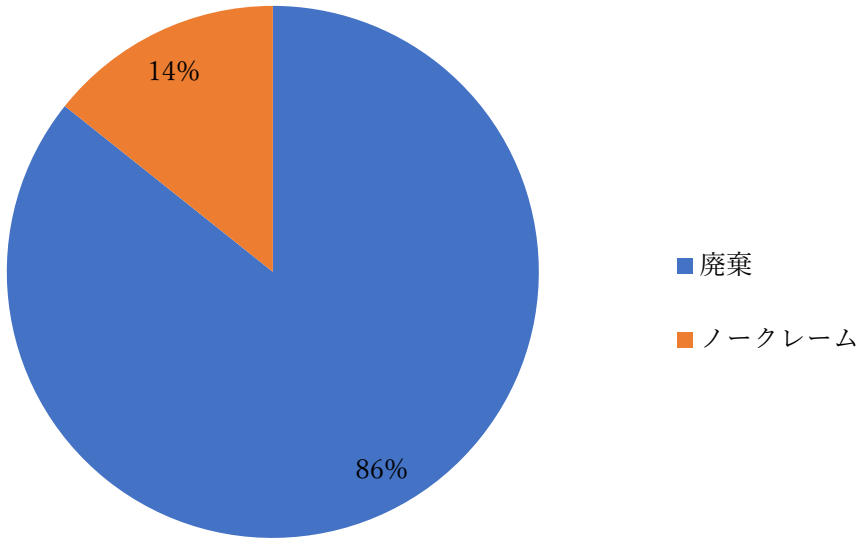


表４３　医療品の処理方法



4 － 3 －J. 野菜・青果物

表４４　野菜・青果物の損害形態

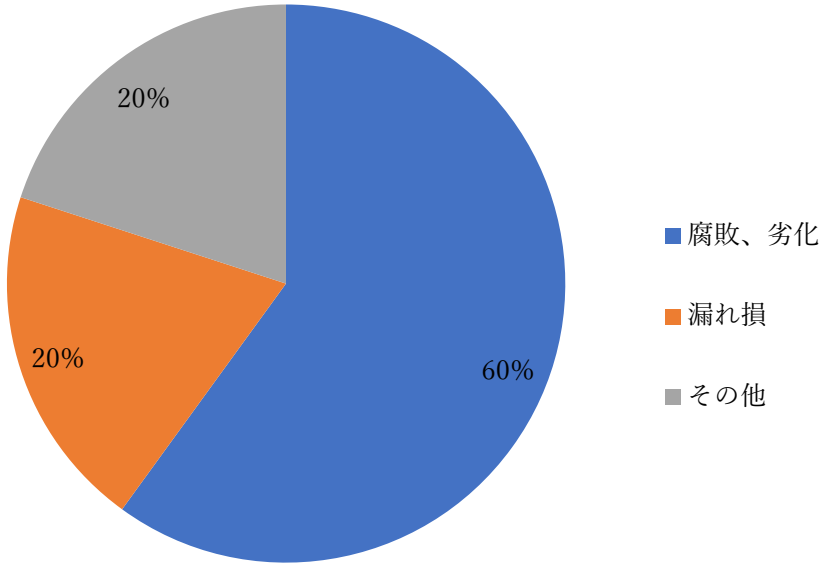


表４５　野菜・青果物の損害原因

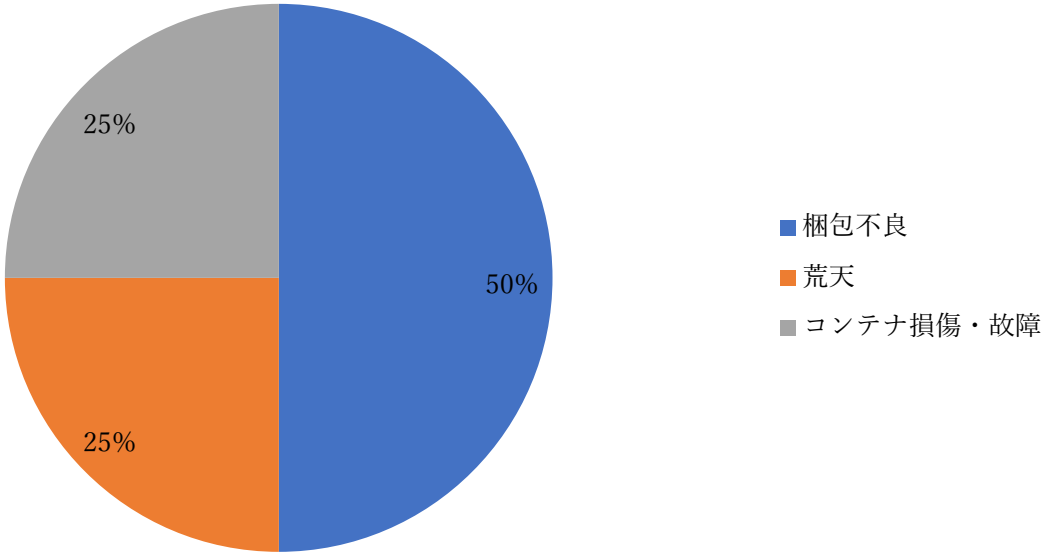


表４６　野菜・青果物の事故発生場所

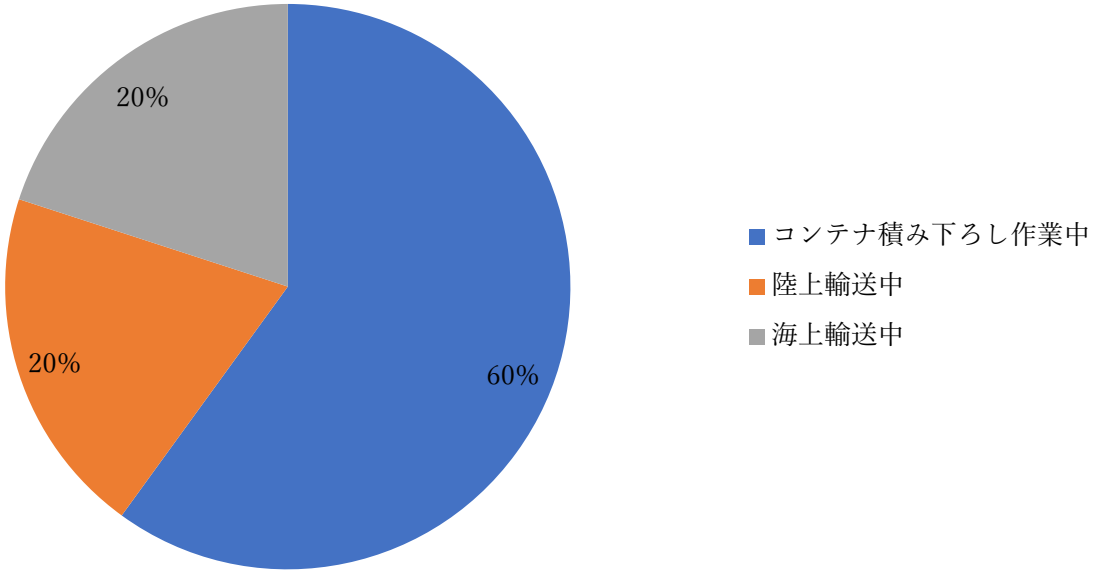
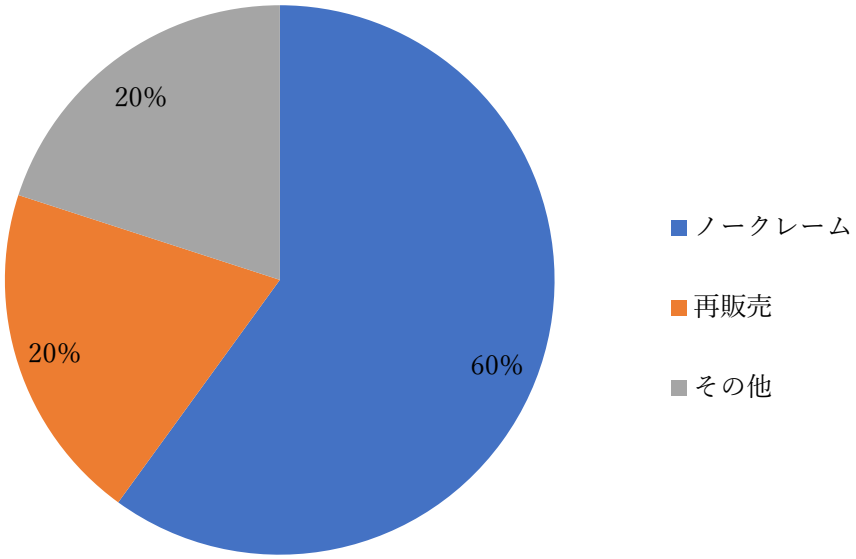


表４７　野菜・青果物の処理方法



４－４．損傷形態別の発生場所および、損害原因

４－４－A．破損・曲損・凹損・変形

表４８　破損・曲損・凹損・変形の発生場所

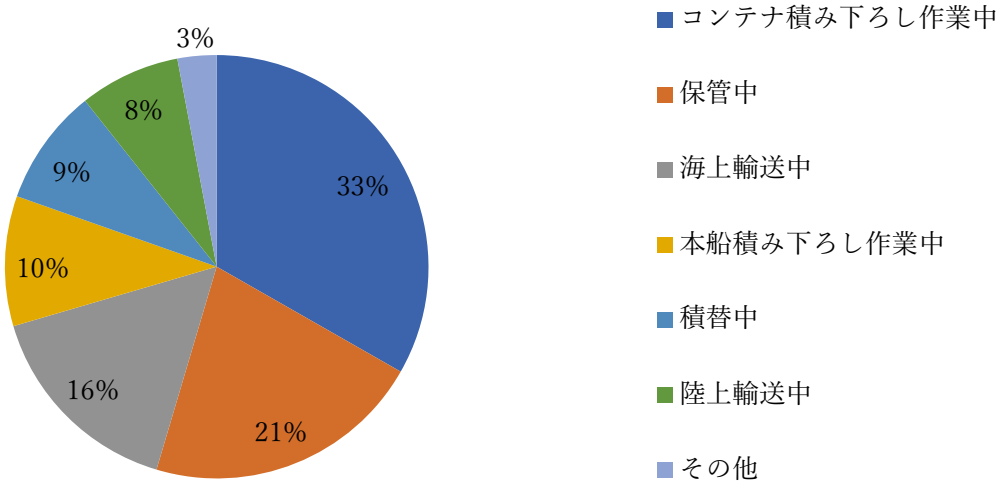
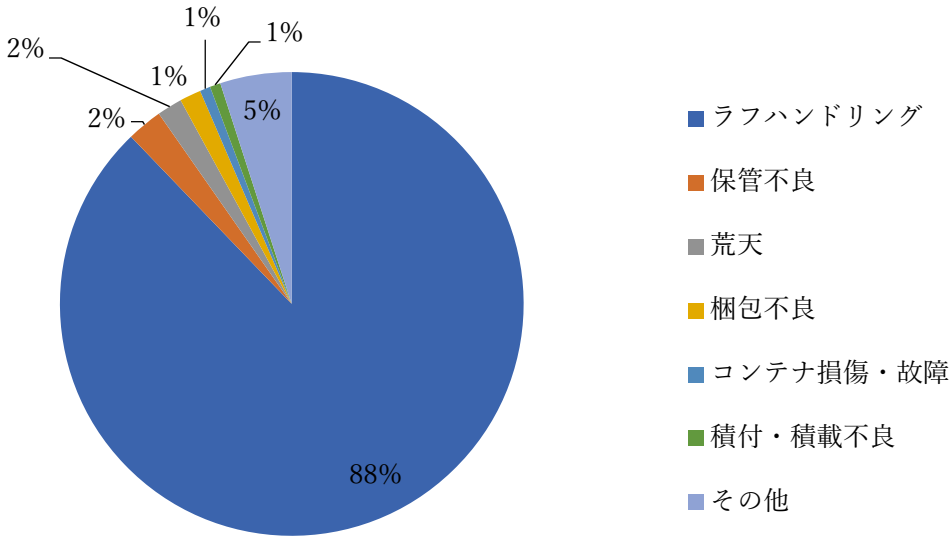


表４９　破損・曲損・凹損・変形の損傷原因



４－４－B．清水濡れ

表５０　清水濡れの発生場所

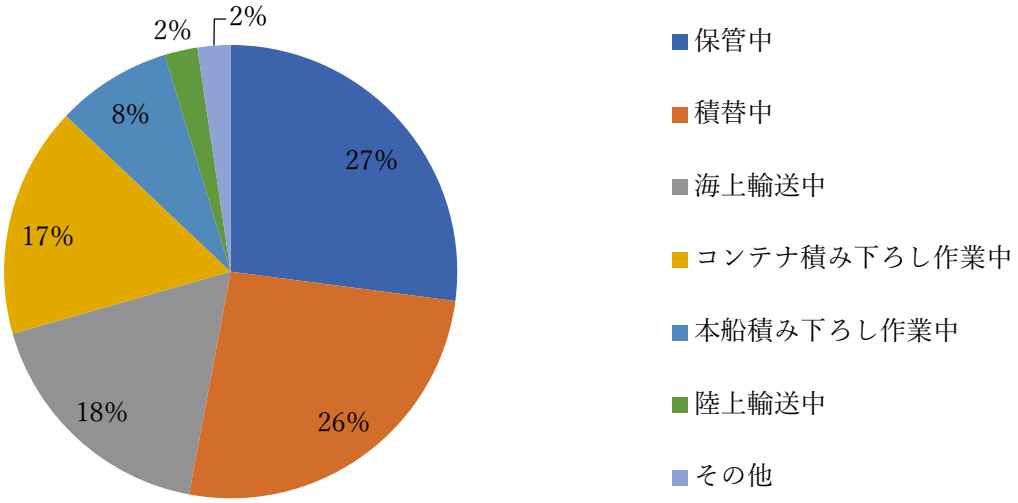
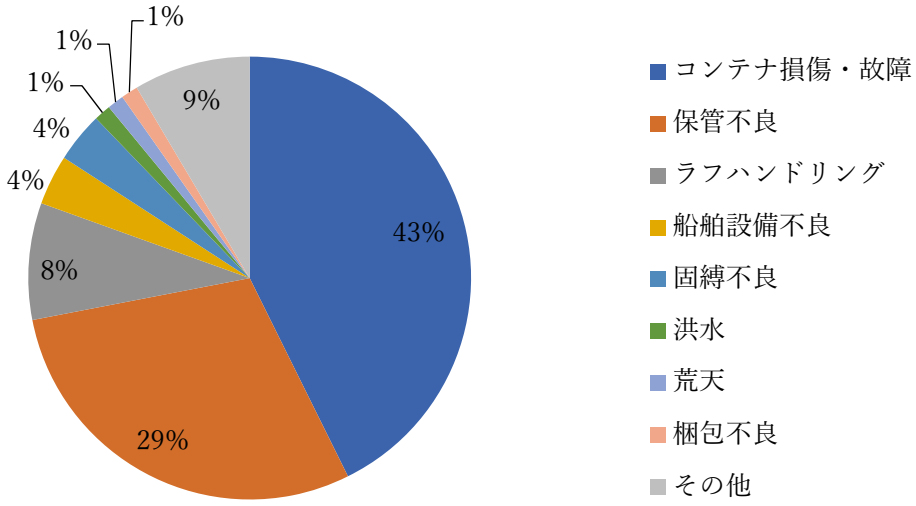


表５１　清水濡れの損傷原因



4－4－C. 錆損

表５２　錆損の発生場所

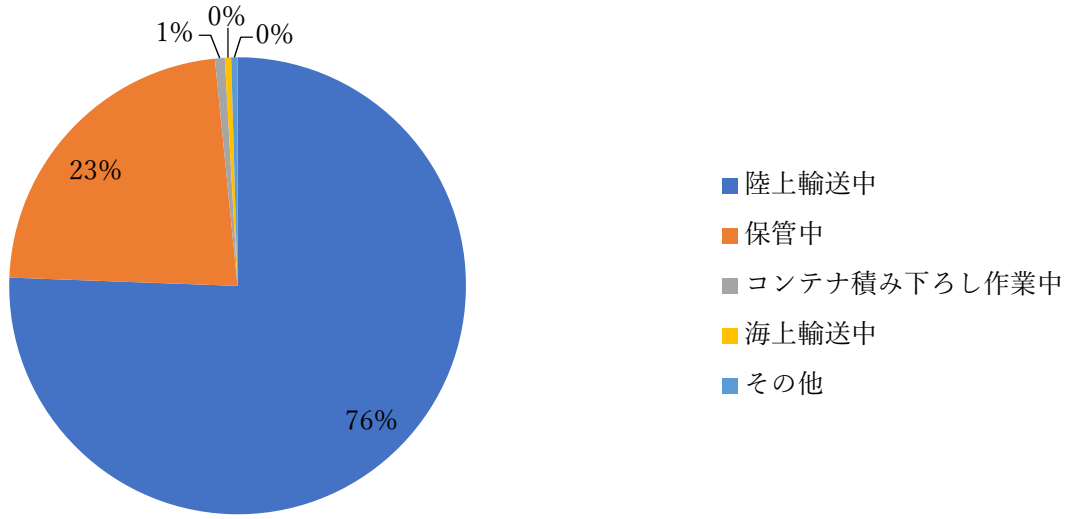
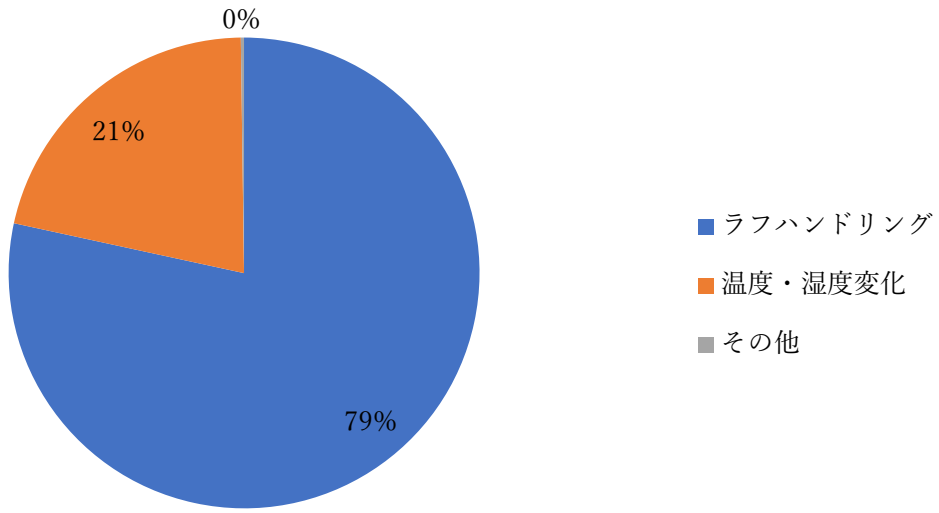


表５３　錆損の損傷原因



4 － 4 －D. 汚損

表５４　汚損の発生場所

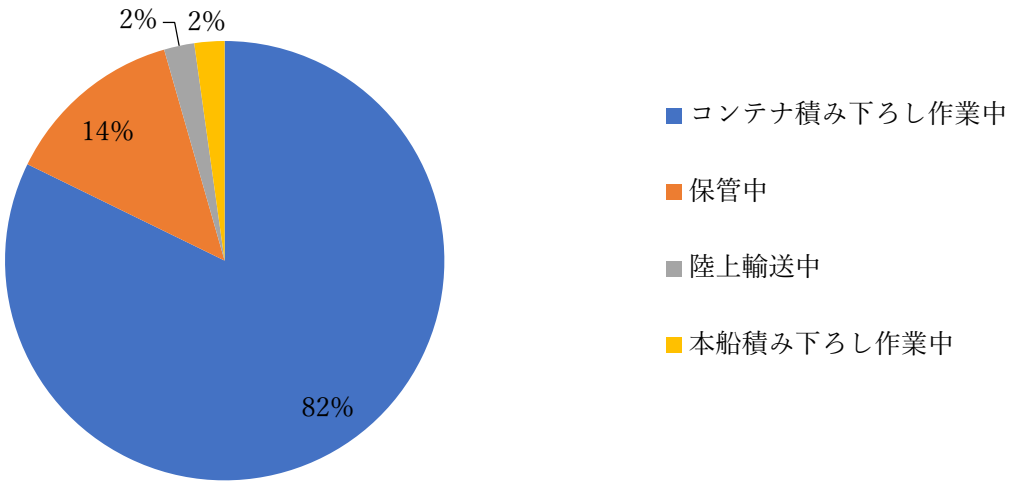
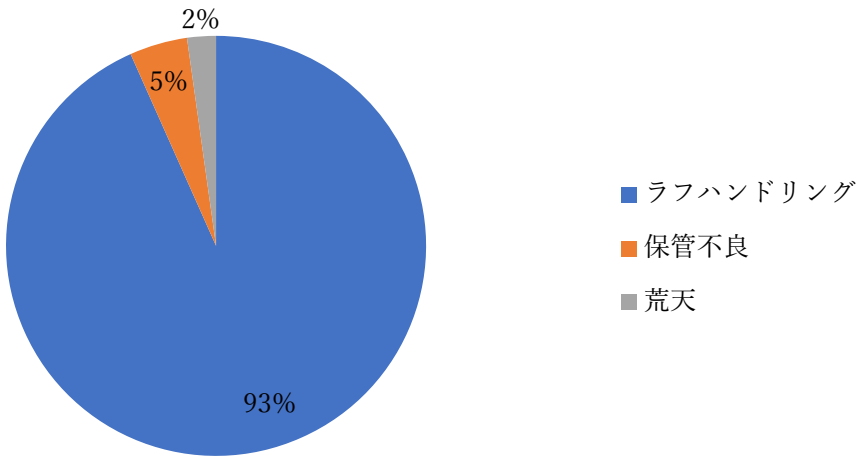


表５５　汚損の損傷原因



4－4－E. 抜荷・窃盗

表５６　抜荷・窃盗の発生場所

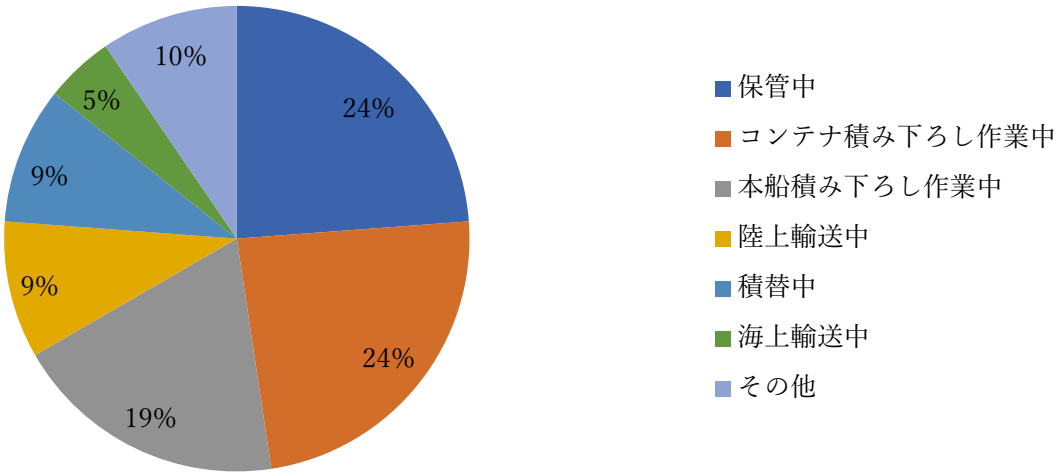
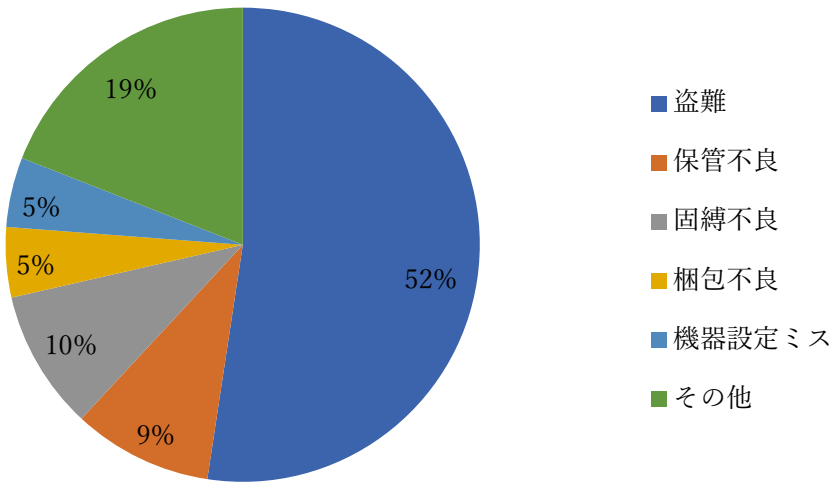


表５７　抜荷・窃盗の損傷原因



４－４－F. 腐敗、劣化

表５８　腐敗・劣化の発生場所

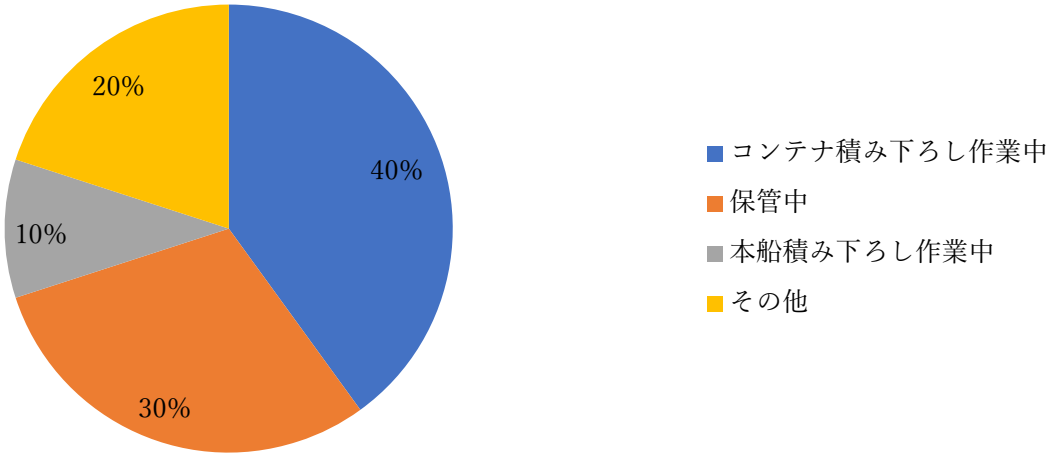
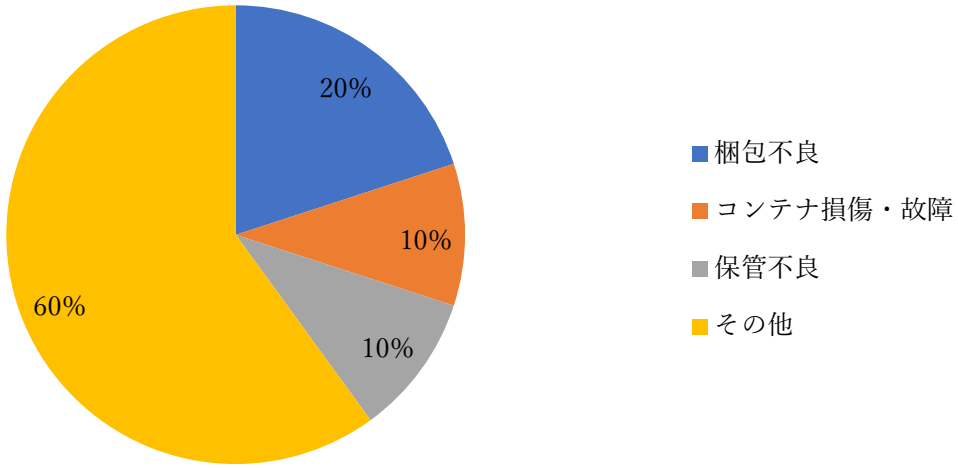


表５９　腐敗・劣化の損傷原因



4－4－G. 漏れ損

表６０　漏れ損の発生場所

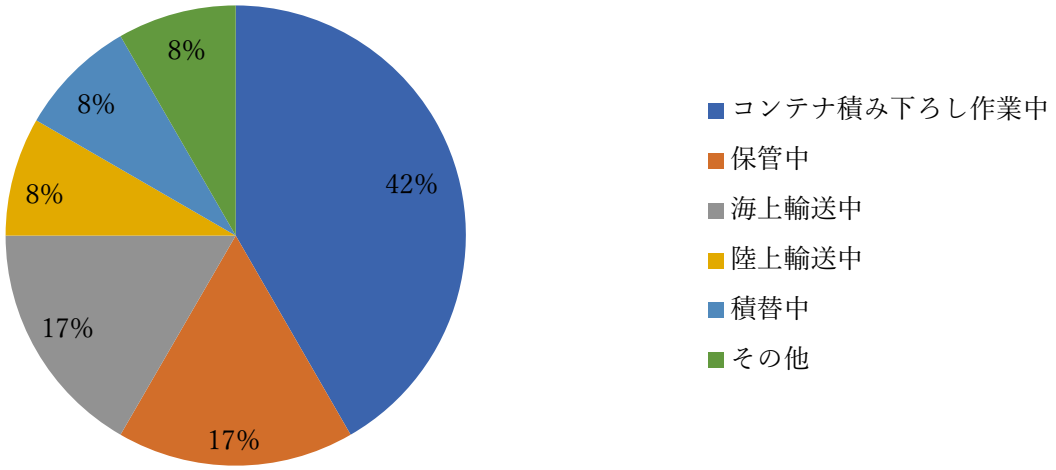
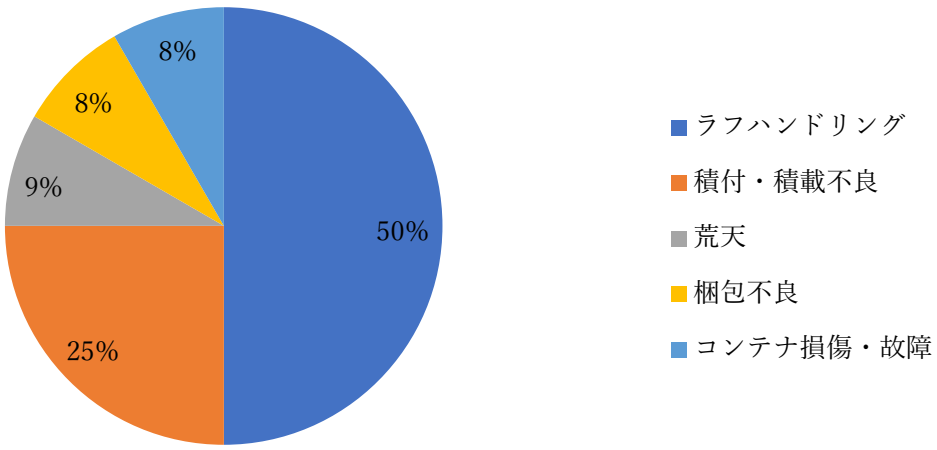


表６１　漏れ損の損傷原因



５．終わりに

本調査より、マレーシア国内の輸入貨物 2017 年から 2022 年にかけての 6 年分の事故案件の集積及び分析を実施した結果、輸送に関わる様々な機器は日々進歩しても事故の傾向に大きな差は見られないことがわかった。集積したデータを元に、更に効果的な事故対策を検討すべく活用していきたい。

(公 3－02)

損害貨物のデータベース（海外）

報告書

２０２３年3月31日

一般社団法人日本海事検定協会
NKKK (TAIWAN), LTD.

目次

１． 調査目的：

当社、亞東海事檢定保險公證人股份有限公司（英名：NKKK (TAIWAN), LTD.）は、台湾への輸入貨物の検査、鑑定および検量業務を行うべく 1987 年に設立された。

当社設立から現在までの 35 年間､台湾経済は堅調に成長してきた｡台湾への輸入貨物もその種類、数量が大きく変化している。

特に、ここ数年は、IT 産業の急成長により、日本からの電子部品の輸入量は、2001 年から 3 倍以上に増加している。

そこで、本報告書では、2022 年度（2022 年 1 月－12 月）に当社が施検した日本からの輸入貨物の事故案件について、貨物種類、輸送手段別の損害形態を纏めた。

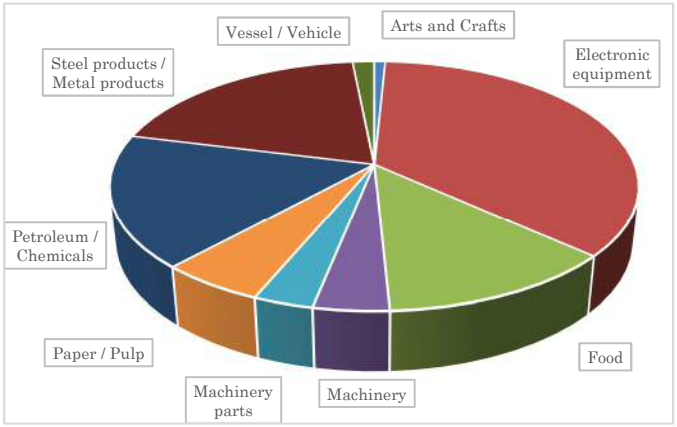
また、急増する電子部品の損傷についてフォーカスし、その損傷原因及び損傷防止策について提言した。

２． 日本から台湾への主要輸入貨物の推移（2000 年－2022 年）

Currency Thousand USD

Year	Food	Petroleum / Chemicals	Paper / Pulp	Steel products / Metal products	Electronic equipment	Machinery	Vehicle
2001	383,856	3,222,495	216,959	2,191,543	3,655,628	5,353,053	1,054,401
2002	392,363	3,717,843	259,685	2,564,816	4,090,377	4,654,052	1,197,389
2003	467,587	4,482,653	277,753	3,052,677	4,597,317	6,789,115	1,576,043
2004	563,145	6,162,125	319,562	4,116,672	5,550,269	9,970,912	2,245,667
2005	642,578	7,135,263	308,767	4,904,807	5,949,316	9,496,038	2,958,980
2006	701,147	8,157,305	299,176	5,203,577	7,024,200	8,932,331	1,706,919
2007	699,223	8,222,321	335,201	6,051,627	6,799,126	7,777,940	1,699,746
2008	809,247	8,403,806	383,899	6,088,447	7,452,992	7,920,202	1,479,203
2009	686,940	6,514,791	300,958	4,232,361	6,722,023	6,069,968	1,698,227
2010	796,602	8,695,950	414,823	6,039,488	8,787,655	10,707,587	2,294,258
2011	865,023	9,365,241	445,479	6,403,531	8,634,195	9,149,729	2,643,756
2012	906,288	8,340,827	440,134	5,895,459	8,409,414	7,547,132	2,705,204
2013	862,919	7,807,212	440,686	5,686,214	6,953,859	7,068,303	2,724,636
2014	711,401	7,154,650	342,646	5,349,995	6,165,438	7,235,123	2,548,658
2015	738,018	6,024,690	310,237	4,240,640	6,683,204	7,167,558	2,580,766
2016	690,078	6,268,545	331,999	3,767,632	7,428,938	8,584,800	2,756,719
2017	406,596	6,794,545	390,694	4,525,487	7,678,287	7,921,056	2,779,148
2018	420,244	7,658,871	364,772	4,958,323	8,274,096	7,391,665	3,088,159
2019	427,338	7,384,527	340,334	3,986,573	8,305,820	9,134,899	3,352,511
2020	472,965	7,104,724	333,442	4,450,543	9,864,516	8,476,332	3,299,313
2021	562,474	8,393,764	478,246	5,535,768	12,611,600	10,741,298	3,577,228
2022	583,148	8,372,926	427,680	5,570,662	11,681,626	11,301,889	3,260,611

３．日本からの輸入貨物種類別の損傷事故割合（事故件数ベース）

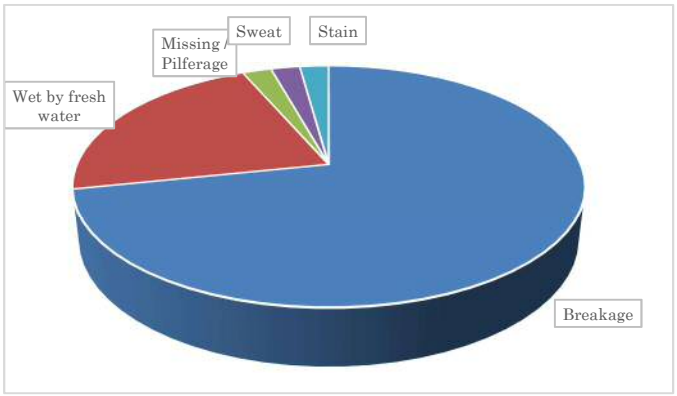


Cargo	Ratio (%)
Arts and Crafts	0.8%
Electronic equipment	35.9%
Food	12.5%
Machinery	3.9%
Machinery parts	3.1%
Paper / Pulp	5.5%
Petroleum / Chemicals	17.2%
Steel products / Metal products	19.5%
Vehicle	1.6%

図表１：　日本からの輸入貨物の損傷貨物割合

輸入貨物事故全体の約三分の一を電子部品が占めている。次に、鉄・非鉄金属、化学製品（液体 Bulk を除く）、食品の順となっている。

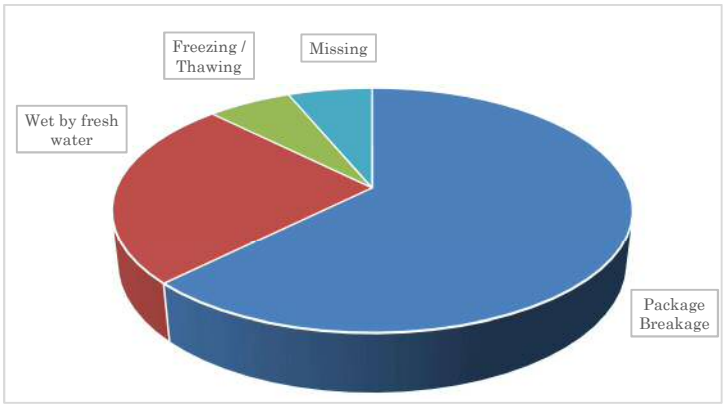
損傷の多い上記貨物の損傷形態は以下であった。



Electronic equipment	Ratio %
Breakage	71.7%
Wet by fresh water	21.7%
Missing / Pilferage	2.2%
Sweat	2.2%
Stain	2.2%

図表 2：　電子部品の損傷形態割合

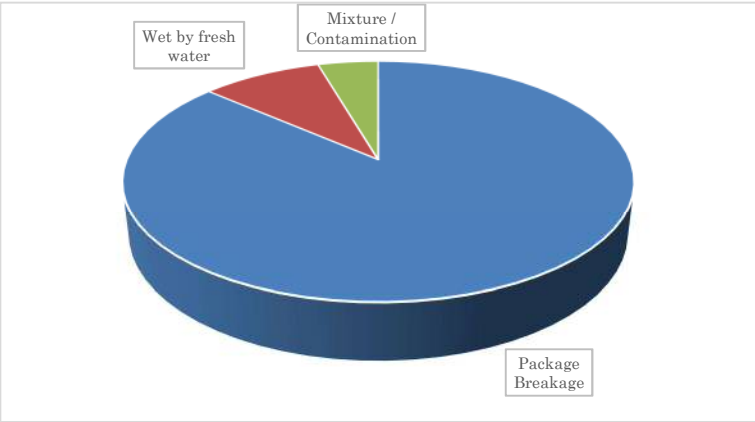
また、この電子部品の約 70%が破損、20%が濡れ損であった。



Food	Ratio(%)
Package Breakage	62.4%
Wet by fresh water	25.0%
Freezing / Thawing	6.3%
Missing	6.3%

図表 3：　食品の損傷形態割合

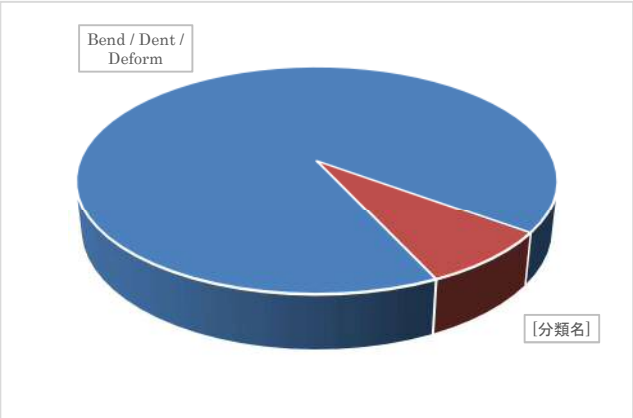
食品では、Package Breakage（梱包破損）が 60%超、濡れ損が 25%であった。



Chemicals	Ratio %
Package Breakage	86.4%
Wet by fresh water	9.1%
Mixture / Contamination	4.5%

図表 4：　化学製品（液体 Bulk を除く）の損傷形態割合

当社が検査した損傷化学製品は、袋入りの個体製品およびドラム/缶入りの液体製品であり、損傷形態は、袋入り製品は破袋、缶入り製品は、凹損、打損によって発生した穴・クラックからの漏れ損であった。



Steel products / Metal products	Ratio (%)
Bend / Dent / Deform	92.0%
Rust (Fresh Water / Moisture)	8.0%

図表 5：　鉄・非鉄金属の損傷形態割合

鋼材貨物輸送は、本船ホールド積とコンテナ積の 2 種類があるが、輸送中の動揺による荷崩れによる損傷が 92%、その他 8%がコンテナ穴あきによる濡れ事故であった。

４．電子部品の損傷について

前述のように台湾の IT 産業の成長に伴い、当該貨物の輸入量は増加している。それに伴い、貨物事故は年々増加している。

具体的な電子部品としては、IC、ウエハー、液晶フィルム、リレー、キャパシター、センサー等であり、この種の貨物は、梱包が破損しているだけであっても、品質保証上の問題で NG となることが多い。

しかしながら、輸送形態は、海上コンテナ輸送もしくは航空機輸送であり、そのハンドリングについても他の貨物と同様に取り扱われる。

梱包については、各貨物とも工夫がなされているが、フォークリフト等による貨物ハンドリング中の接触、落下、転倒アクシデントに対しては無力である。

台湾の電子産業は、台湾西北部の新竹市の新竹科学工業園区等に多く集まっており、それらの工場で使用される電子部品は工場に近い台湾桃園国際空港（繁体字表記：桃園国際機場）が使用されることになる。

図表 6：　台湾桃園国際空港と新竹化学工業園区

この台湾桃園国際空港は、２０２１年度の航空貨物量は、香港、仁川、上海浦東に次ぐ世界第４位（成田空港は第５位）、その取扱量は 279 万トンで年々増加している。

その貨物保管・荷捌き上屋は下記写真のごとく貨物が満杯の状態となっている。

（同空港の貨物上屋は、写真撮影が禁止されているため下記写真は、インターネットから取り出したものである）

図表 7：　台湾桃園国際空港貨物上屋内の貨物の保管状態

この写真から分かるように各ブロックの貨物は人間の高さ以上に積み上げられており、中には今にも落下しそうなカートン（写真中赤丸）もある。各ブロック間の通路は狭くフォークリフトでのパレットのハンドリングはかなりタイトな状態であり、ハンドリング中の貨物同士やフォークリフトとの接触事故は避けられない。

このような環境で貨物の損傷を防止するためには、空港内貨物保管環境が改善されるまで、個々の貨物特性や受荷主やユーザーの貨物受け入れ基準を十分考慮した梱包を施す以外に対策はないものと思料する。

以上

2023 年 3 月 31 日

DATABASE OF DAMAGE CARGO

DATA ANALYSIS OF 2022

PRODUCED BY NKKT

CONTENTS

1. Introduction

The purpose of this database is to organize past accident information, analyze the type of damaged cargo, accident characteristics and trends, cause of accident, etc., examine the accident countermeasures.

2. Database Subject

The subject in this database included damage cases in 2022, which were carried as directly request or as a third-party inspection agency for import shipment, and we extracted and analyzed it, mainly for container cargo.

This database consists of data collected under the above conditions, and it is only a reference value because it is a part of import cargo accidents and is not complete.
In addition, this data does not represent the frequency of accidents in cargo imported into Thailand, as it only contains information on accidents which have been inspected by NKKT.

3. Database Categories

Transportation method:

- Vessel
- Flight
- Train
- Truck
- Other Method

Cargo Categories:

- Food
- Machinery
- Paper
- Chemical Product
- Metal Material
- Steel
- Electrical Product
- Agricultural Product
- Medical Item

Packages:

- Bare
- Wooden Case
- Bag
- Carton
- Palletized
- Drum
- Bulk
- Roll
- Bundle
- Steel Case
- Aluminate Sheet

Location where damage occurred:

- Storage at Loading Port
- Loading Operation
- Vanning Operation
- Inland Transportation
- In Transit
- Transshipping
- Unloading Operation
- Devanning Operation
- Storage at Discharging Port
- Storage at Airport
- During Processing

Damage type:

- Deformed
- Leakage
- Torn
- Wet by Sea Water
- Wet by Fresh Water
- Humidity and/or Temperature change gap
- Molded
- Rusted
- Stained
- Oxidized
- Contaminated

- Deteriorated
- Missing/Non-delivery/Pilferage
- Operation Failure/Malfunction
- Burnt
- Quality Degraded
- Discrepancy
- Melted/Thaw

Cause of damage:

- Impact/Shock during transportation
- Rough handling
- Container sustained damage/malfunction
- Poor Lashing
- Improper Stowage/Loading
- Poor cleaning
- Fire
- Rise in Temperature
- Humidity change/Temperature change gap
- Cargo nature
- Vessel/Container Submerge
- Thief
- Defective cargo hold
- Improper Storage
- Delay of the vessel

4. Detail damage case based on cargo types

1. Summary of Type of Damage in 2022

Type of Damage	Ratio
Contaminated	4.78%
Deformed	44.10%
Deteriorated	2.25%
Discrepancy	0.28%
Leakage	0.84%
Missing/Non-delivery/Pilferage	0.56%
Molded	1.69%
Operation Failure/Malfunction	0.28%
Quality Degraded	1.69%
Rusted	16.01%
Stained	0.28%
Torn	5.34%
Wet by Fresh Water	21.07%
Wet by Sea Water	0.84%
Total	100.00%

Table 1: Summary of Type of damage in 2022

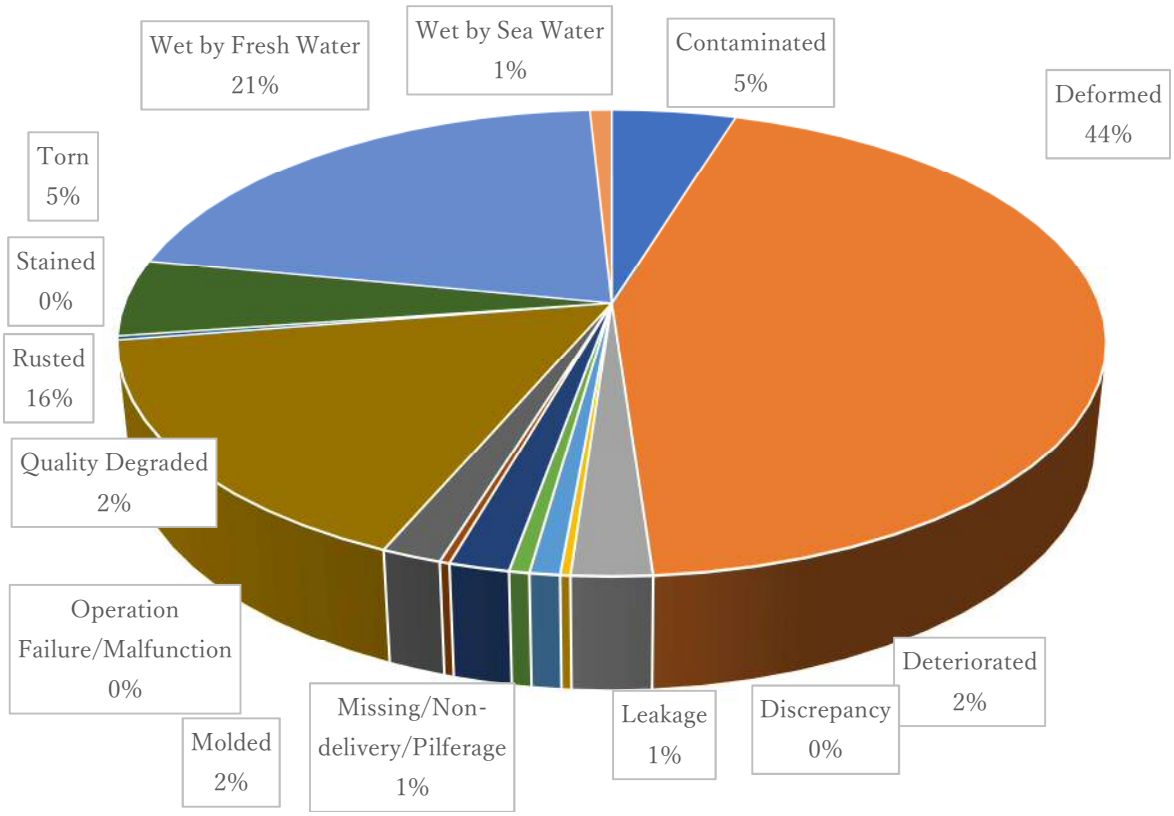


Chart 1: Summary of Type of damage in 2022

2. Food

[2-1] Type of damage

Type of Damage	Ratio
Contaminated	4.35%
Deformed	4.35%
Deteriorated	30.43%
Leakage	4.35%
Missing/Non-delivery/Pilferage	4.35%
Quality Degraded	26.09%
Torn	4.35%
Wet by Fresh Water	21.74%
Total	100.00%

Table 2-1: Type of damage to Food cargo

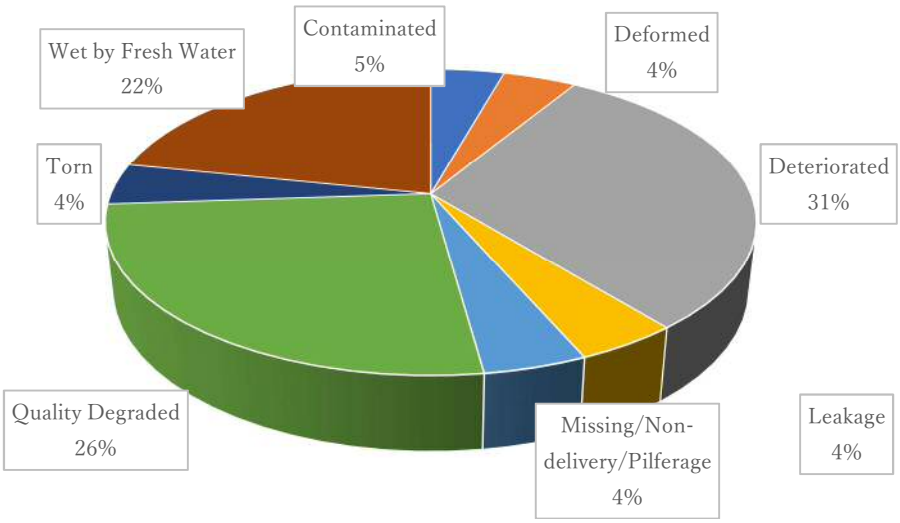


Chart 2-1: Type of damage to Food cargo

[2-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	4.35%
In Transit	73.91%
Inland Transportation	4.35%
Storage at Discharging Port	8.70%
Storage at Loading Port	4.35%
Vanning Operation	4.35%
Total	100.00%

Table 2-2: Location of damage occurred of Food cargo

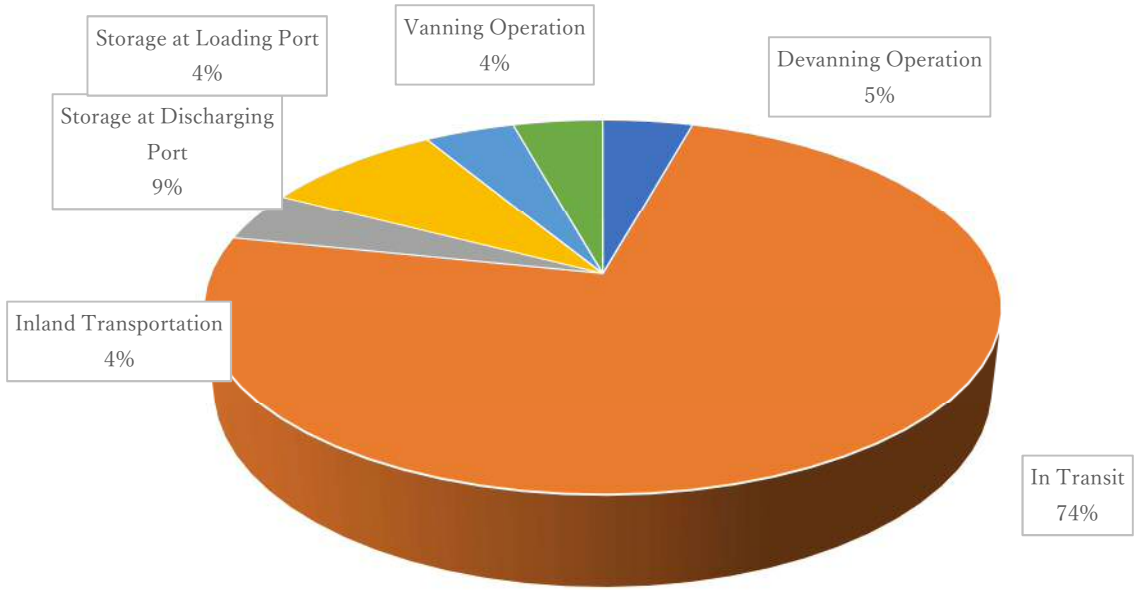


Chart 2-2: Location of damage occurred of Food cargo

[2-3] Cause of damage

Cause of damage	Ratio
Cargo nature	8.70%
Container sustained damage/malfunction	26.09%
Humidity change/Temperature change gap	13.04%
Impact/Shock during transportation	4.35%
Improper Storage	17.39%
Poor cleaning	4.35%
Rise in Temperature	13.04%
Rough handling	8.70%
Thief	4.35%
Total	100.00%

Table 2-3: Cause of damage of Food cargo

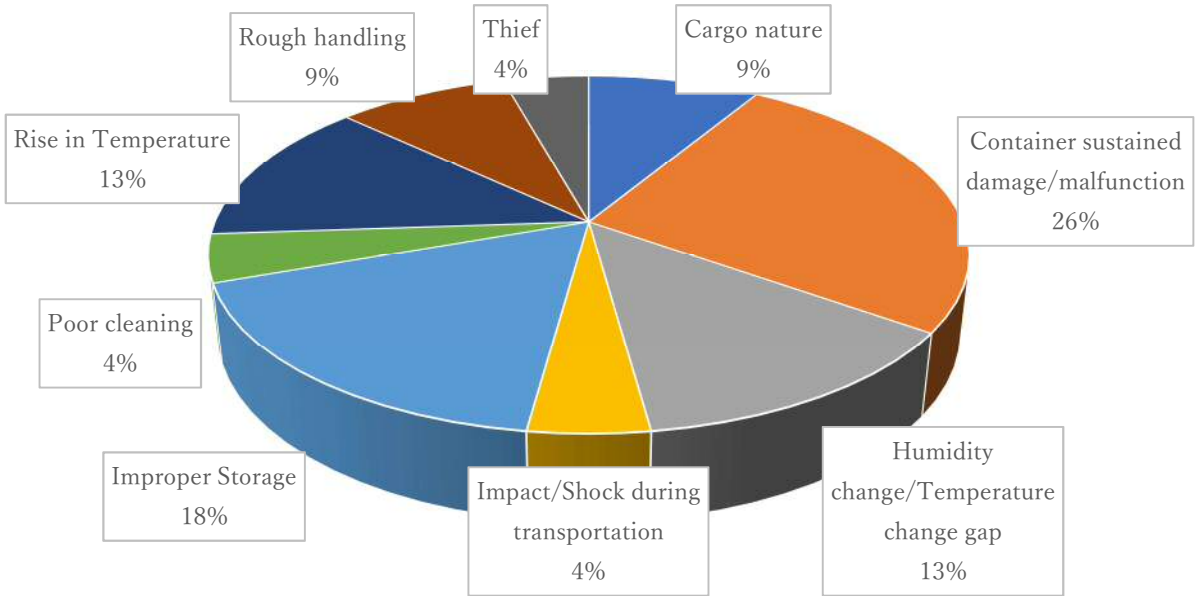


Chart 2-3: Cause of damage of Food cargo

3. Machinery

[3-1] Type of damage

Type of Damage	Ratio
Deformed	65.67%
Discrepancy	1.49%
Rusted	4.48%
Stained	1.49%
Wet by Fresh Water	26.87%
Total	100.00%

Table 3-1: Type of damage to Machinery cargo

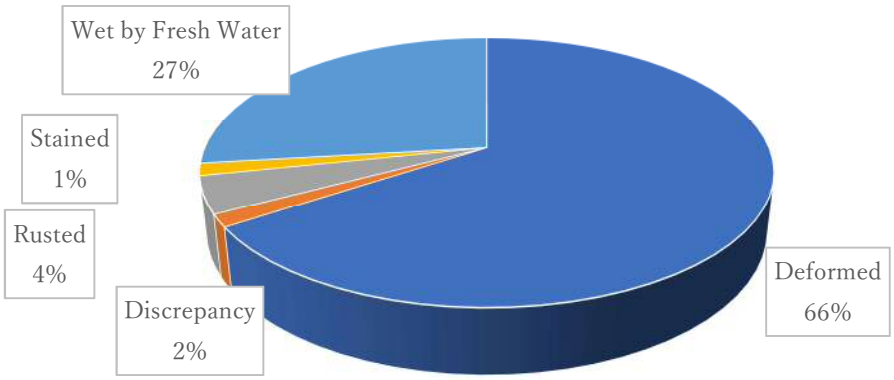


Chart 3-1: Type of damage to Machinery cargo

[3-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	5.97%
In Transit	64.18%
Inland Transportation	5.97%
Loading Operation	1.49%
Storage at Airport	10.45%
Storage at Discharging Port	4.48%
Storage at Loading Port	4.48%
Unloading Operation	2.99%
Total	100.00%

Table 3-2: Location of damage occurred of Machinery cargo

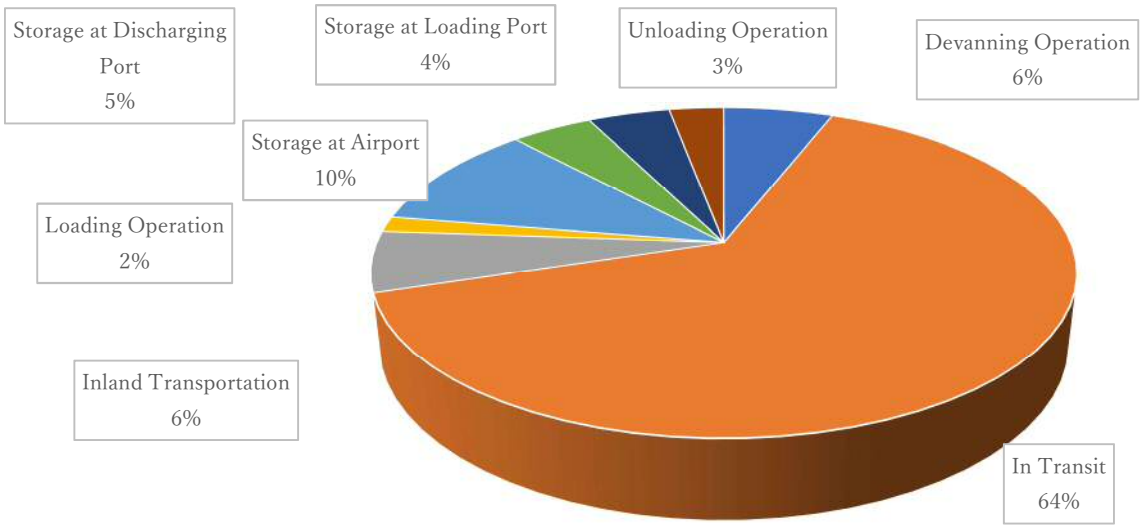


Chart 3-2: Location of damage occurred of Machinery cargo

[3-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	11.94%
Humidity change/Temperature change gap	13.43%
Impact/Shock during transportation	28.36%
Improper Storage	7.46%
Poor cleaning	1.49%
Poor Lashing	1.49%
Rough handling	35.82%
Total	100.00%

Table 3-3: Cause of damage of Machinery cargo

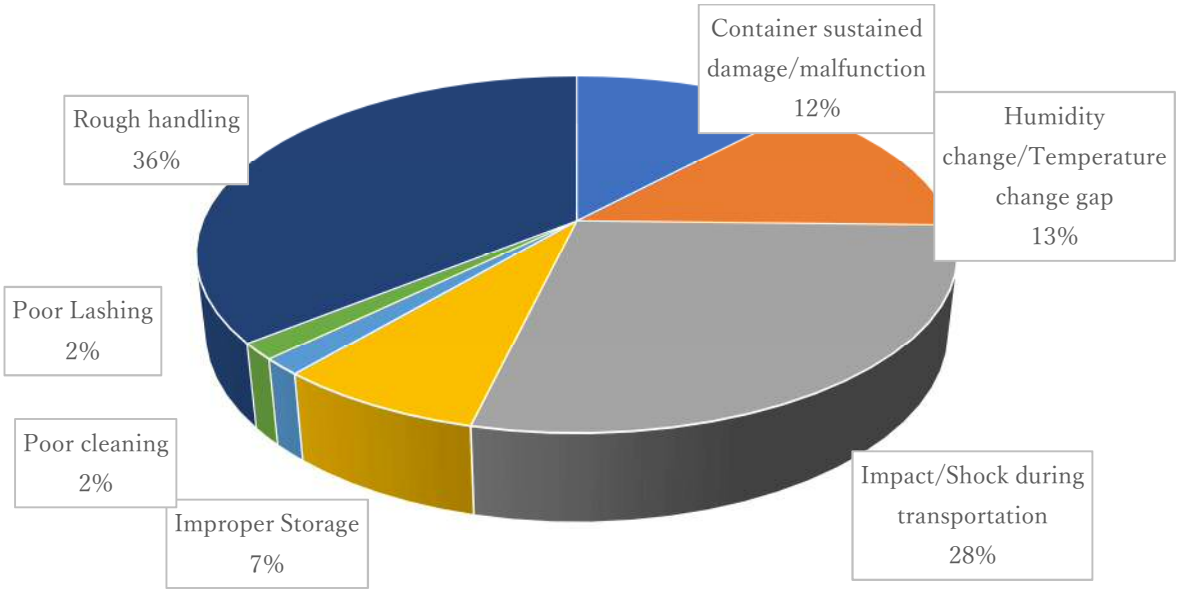


Chart 3-3: Cause of damage of Machinery cargo

4. Paper

[4-1] Type of damage

Type of Damage	Ratio
Deformed	22.22%
Torn	44.44%
Wet by Fresh Water	33.33%
Total	100.00%

Table 4-1: Type of damage of Paper cargo

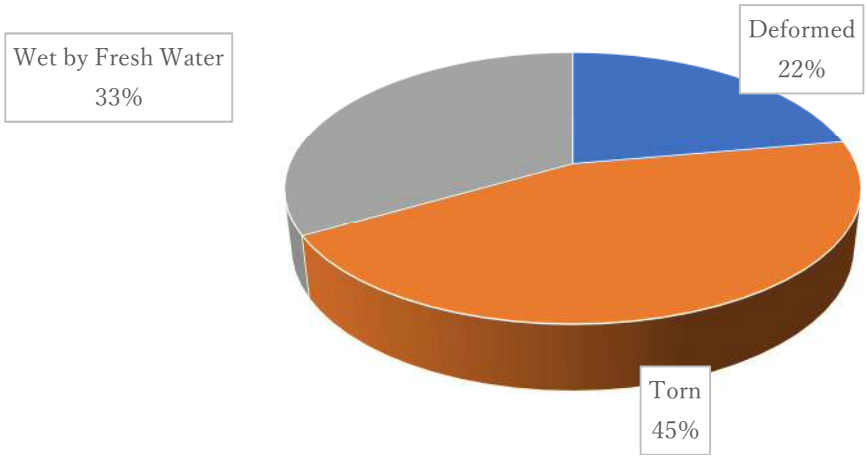


Chart 4-1: Type of damage of Paper cargo

[4-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	22.22%
In Transit	55.56%
Vanning Operation	22.22%
Total	100.00%

Table 4-2: Location of damage occurred of Paper cargo

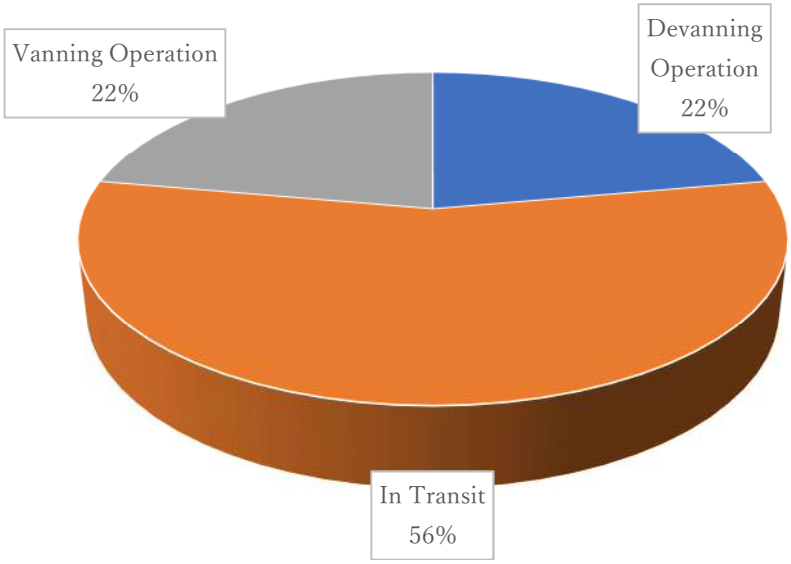


Chart 4-2: Location of damage occurred of Paper cargo

[4-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	33.33%
Impact/Shock during transportation	22.22%
Rough handling	44.44%
Total	100.00%

Table 4-3: Cause of damage of Paper cargo

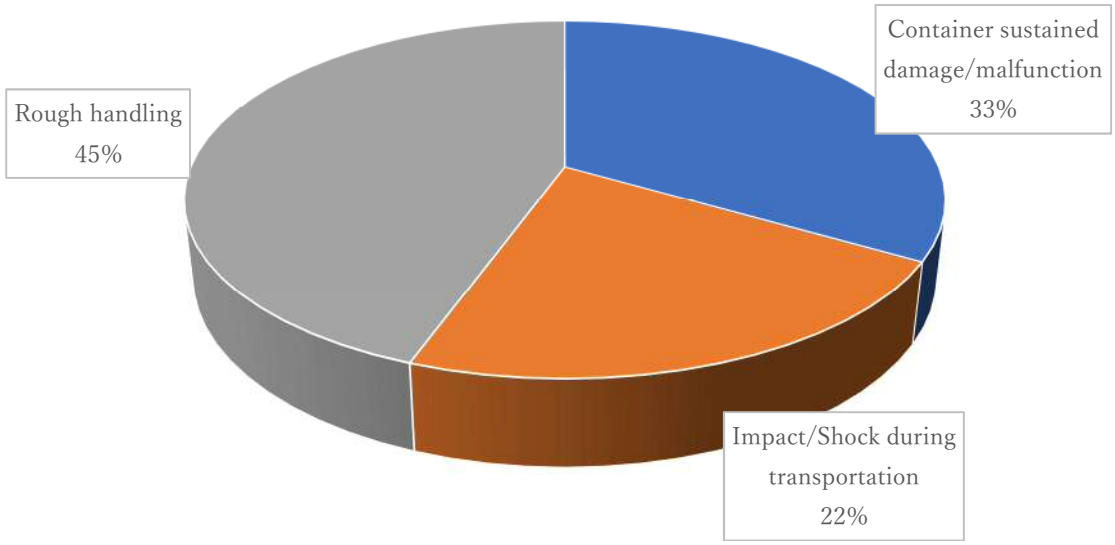


Chart 4-3: Cause of damage of Paper cargo

5. Chemical Product

[5-1] Type of damage

Type of Damage	Ratio
Contaminated	3.45%
Deformed	27.59%
Leakage	6.90%
Torn	31.03%
Wet by Fresh Water	27.59%
Wet by Sea Water	3.45%
Total	100.00%

Table 5-1: Type of damage of Chemical Product

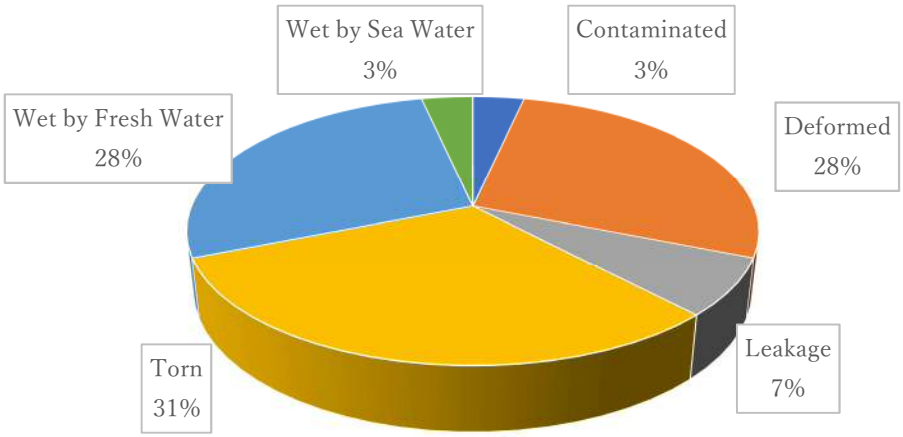


Chart 5-1: Type of damage of Chemical Product

[5-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	13.79%
In Transit	62.07%
Inland Transportation	3.45%
Storage at Airport	3.45%
Storage at Discharging Port	3.45%
Vanning Operation	13.79%
Total	100.00%

Table 5-2: Location of damage occurred of Chemical Product

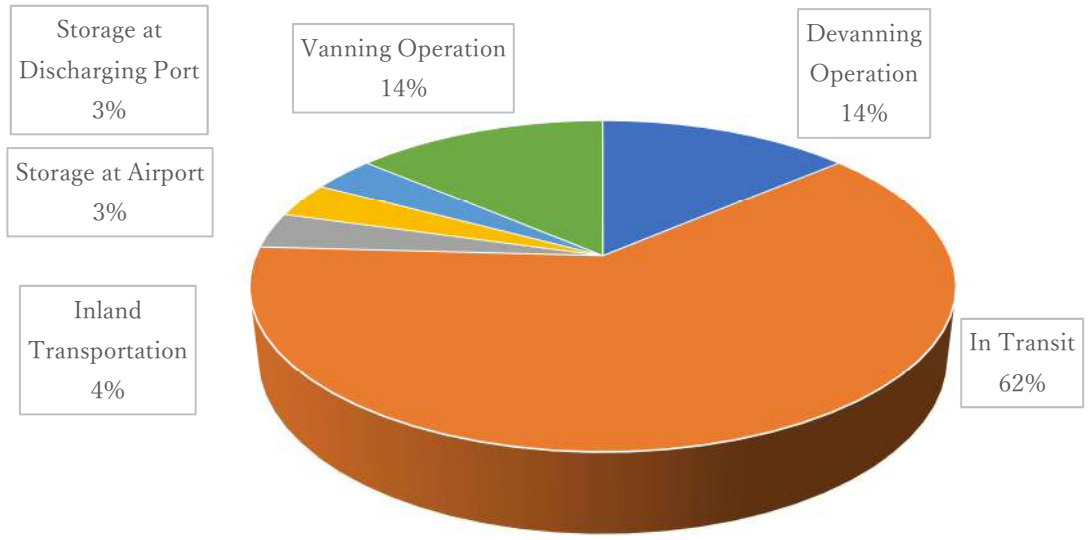


Chart 5-2: Location of damage occurred of Chemical Product

[5-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	6.90%
Impact/Shock during transportation	31.03%
Improper Storage	24.14%
Poor cleaning	3.45%
Rough handling	34.48%
Total	100.00%

Table 5-3: Cause of damage of Chemical Product

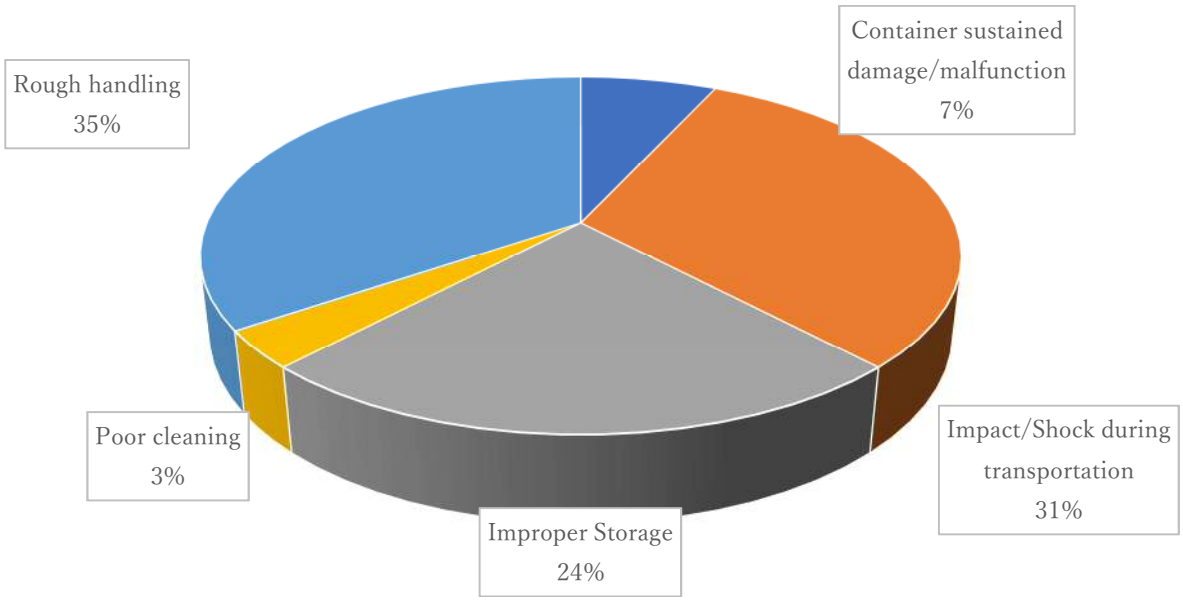


Chart 5-3: Cause of damage of Chemical Product

6. Metal Material

[6-1] Type of damage

Type of Damage	Ratio
Contaminated	2.63%
Deformed	50.00%
Rusted	39.47%
Wet by Fresh Water	5.26%
Wet by Sea Water	2.63%
Total	100.00%

Table 6-1: Type of damage of Metal Material

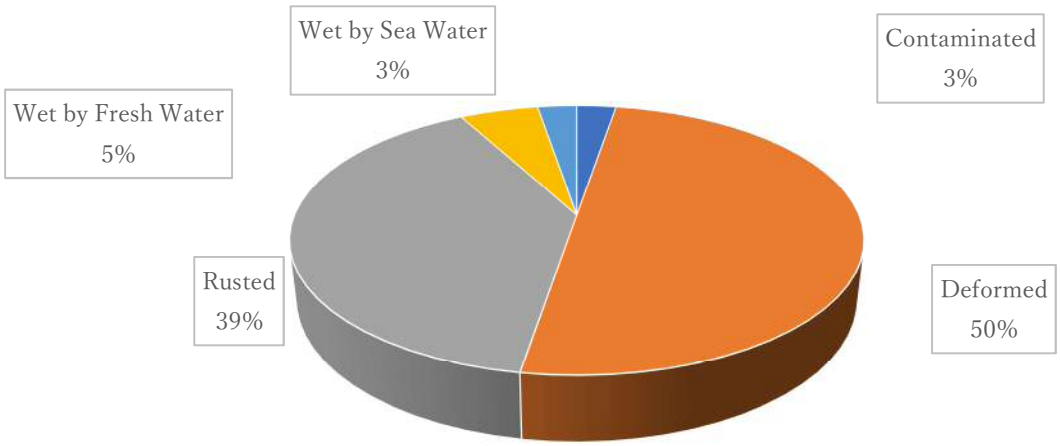


Chart 6-1: Type of damage of Metal Material

[6-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	15.79%
In Transit	65.79%
Inland Transportation	2.63%
Storage at Discharging Port	5.26%
Storage at Loading Port	2.63%
Unloading Operation	2.63%
Vanning Operation	5.26%
Total	100.00%

Table 6-2: Location of damage occurred of Metal Material

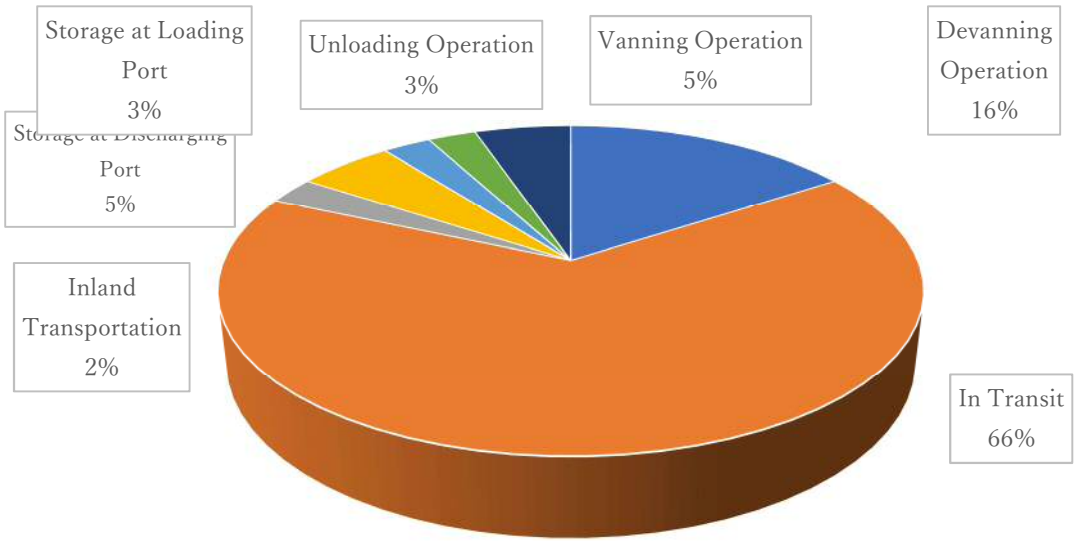


Chart 6-2: Location of damage occurred of Metal Material

[6-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	7.89%
Defective cargo hold	31.58%
Humidity change/Temperature change gap	5.26%
Impact/Shock during transportation	23.68%
Improper Storage	2.63%
Rough handling	28.95%
Total	100.00%

Table 6-3: Cause of damage of Metal Material

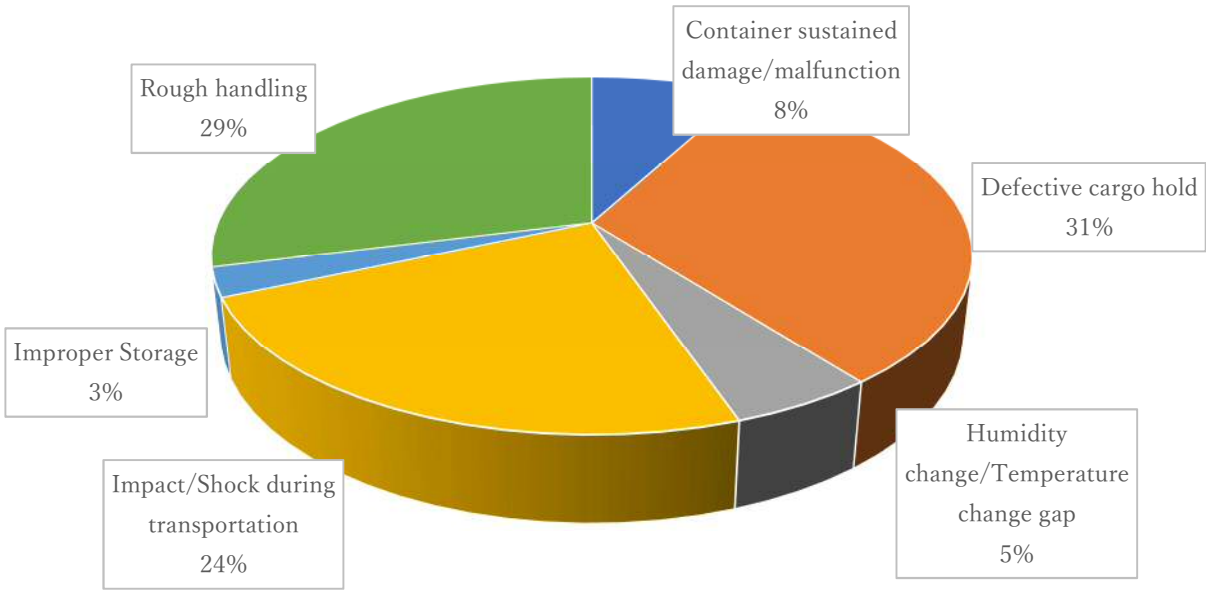


Chart 6-3: Cause of damage of Metal Material

7. Steel

[7-1] Type of damage

Type of Damage	Ratio
Deformed	37.66%
Missing/Non-delivery/Pilferage	1.30%
Rusted	50.65%
Torn	1.30%
Wet by Fresh Water	9.09%
Total	100.00%

Table 7-1: Type of damage of Steel cargo

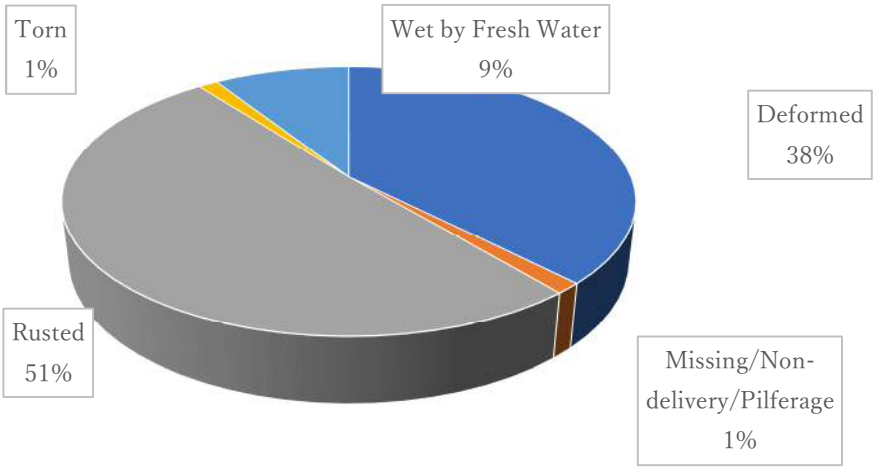


Chart 7-1: Type of damage of Steel cargo

[7-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	2.60%
In Transit	85.71%
Inland Transportation	1.30%
Loading Operation	1.30%
Storage at Discharging Port	6.49%
Storage at Loading Port	1.30%
Vanning Operation	1.30%
Total	100.00%

Table 7-2: Location of damage occurred of Steel cargo

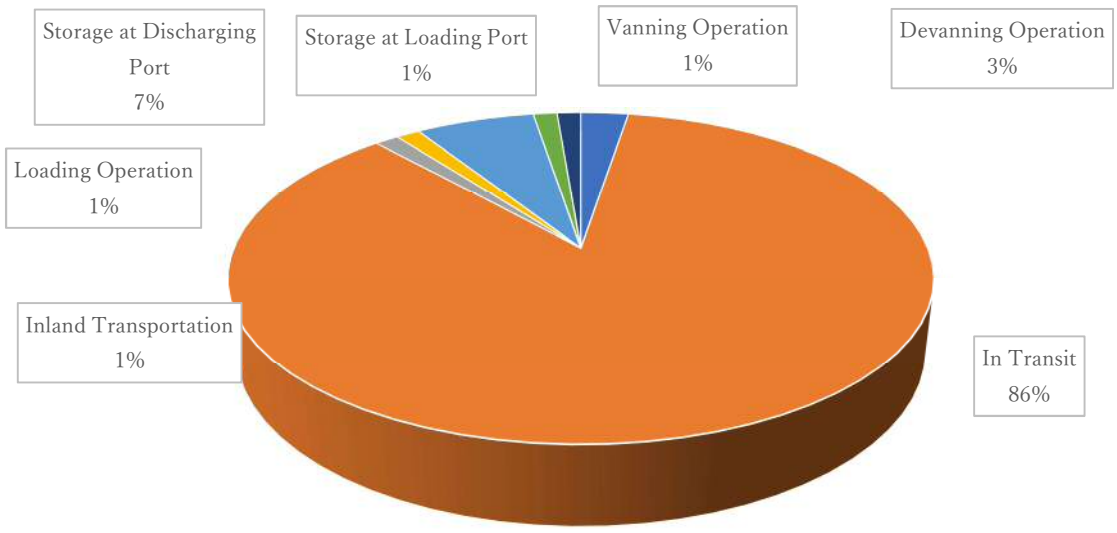


Chart 7-2: Location of damage occurred of Steel cargo

[7-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	3.90%
Defective cargo hold	7.79%
Humidity change/Temperature change gap	38.96%
Impact/Shock during transportation	25.97%
Improper Storage	7.79%
Improper Stowage/Loading	2.60%
Rough handling	11.69%
Thief	1.30%
Total	100.00%

Table 7-3: Cause of damage of Steel cargo

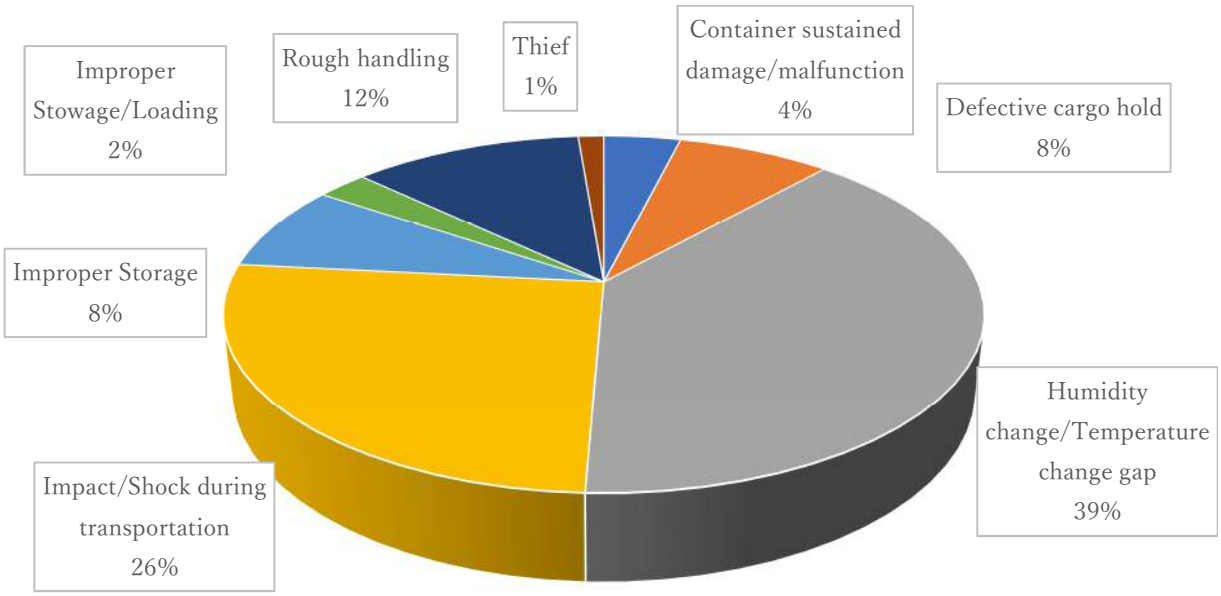


Chart 7-3: Cause of damage of Steel cargo

8. Electric Product

[8-1] Type of damage

Type of Damage	Ratio
Deformed	63.77%
Molded	2.90%
Operation Failure/Malfunction	1.45%
Wet by Fresh Water	30.43%
Wet by Sea Water	1.45%
Total	100.00%

Table 8-1: Type of damage of Electric product

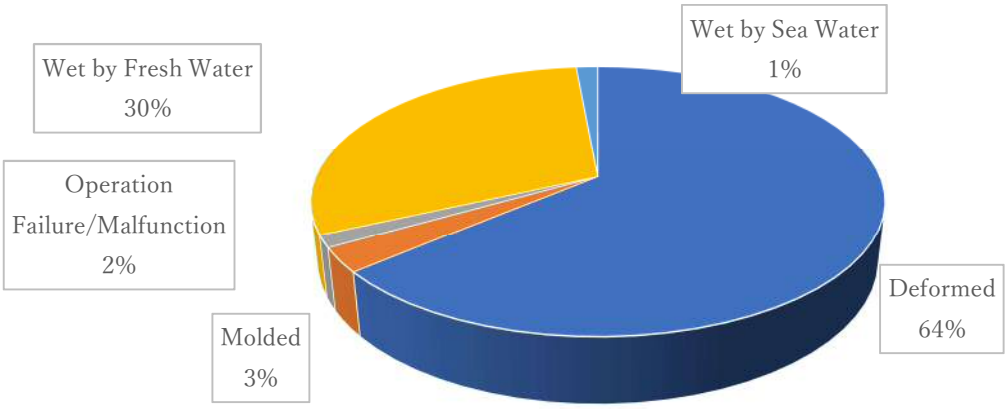


Chart 8-1: Type of damage of Electric product

[8-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	4.35%
In Transit	47.83%
Inland Transportation	7.25%
Storage at Airport	26.09%
Storage at Discharging Port	5.80%
Transshipping	1.45%
Unloading Operation	5.80%
Vanning Operation	1.45%
Total	100.00%

Table 8-2: Location of damage occurred of Electric product

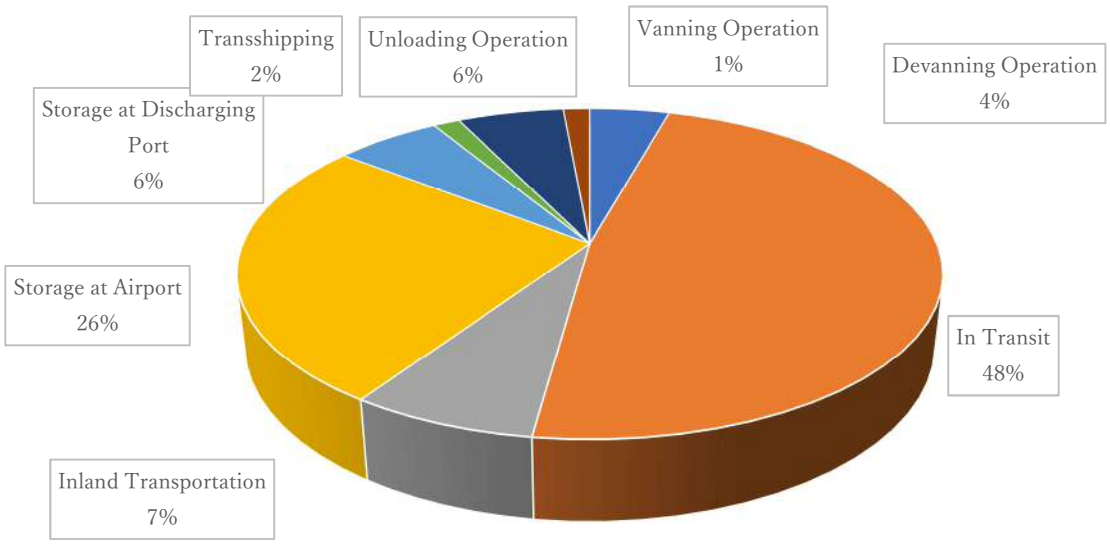


Chart 8-2: Location of damage occurred of Electric product

[8-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	8.70%
Humidity change/Temperature change gap	5.80%
Impact/Shock during transportation	7.25%
Improper Storage	18.84%
Improper Stowage/Loading	1.45%
Rough handling	57.97%
Total	100.00%

Table 8-3: Cause of damage of Electric product

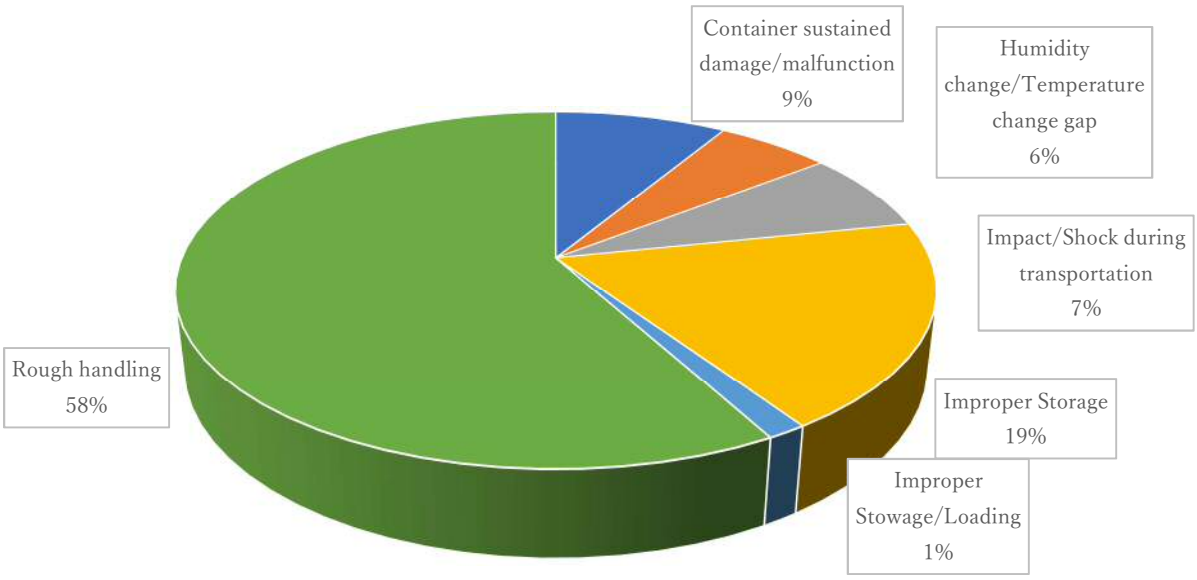


Chart 8-3: Cause of damage of Electric product

9. Agricultural Product

[9-1] Type of damage

Type of Damage	Ratio
Contaminated	77.78%
Molded	16.67%
Wet by Fresh Water	5.56%
Total	100.00%

Table 9-1: Type of damage of Agricultural Product

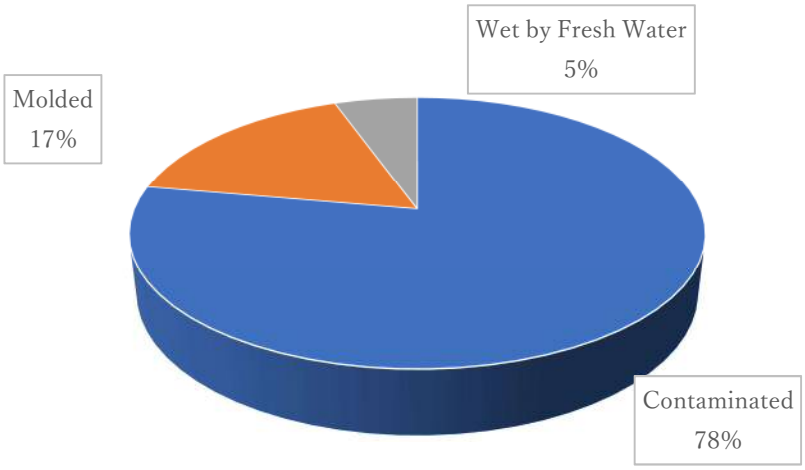


Chart 9-1: Type of damage of Agricultural Product

[9-2] Location of damage occurred

Occurred location	Ratio
In Transit	33.33%
Unloading Operation	61.11%
Vanning Operation	5.56%
Total	100.00%

Table 9-2: Location of damage occurred of Agricultural Product

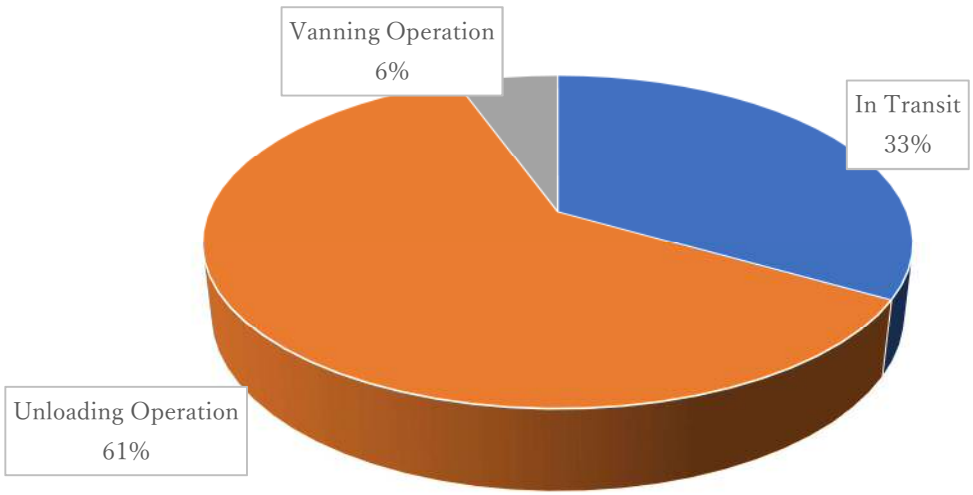


Chart 9-2: Location of damage occurred of Agricultural Product

[9-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	5.56%
Humidity change/Temperature change gap	5.56%
Improper Stowage/Loading	5.56%
Poor cleaning	72.22%
Rough handling	11.11%
Total	100.00%

Table 9-3: Cause of damage of Agricultural Product

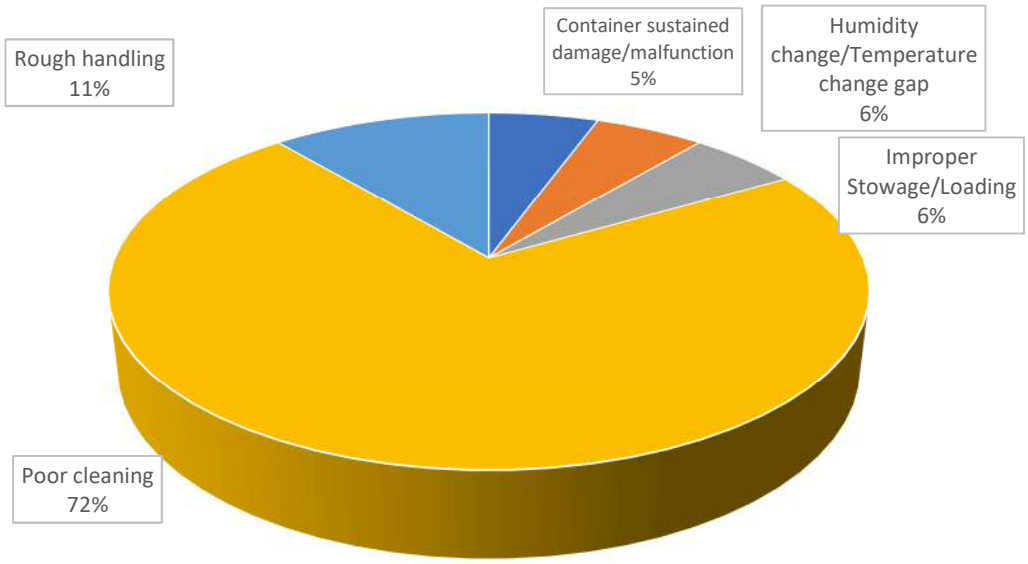


Chart 9-4: Cause of damage of Agricultural Product

10. Medical Item

[10-1] Type of damage

Type of Damage	Ratio
Deformed	40.00%
Torn	15.00%
Wet by Fresh Water	45.00%
Total	100.00%

Table 10-1: Type of damage of Medical Item

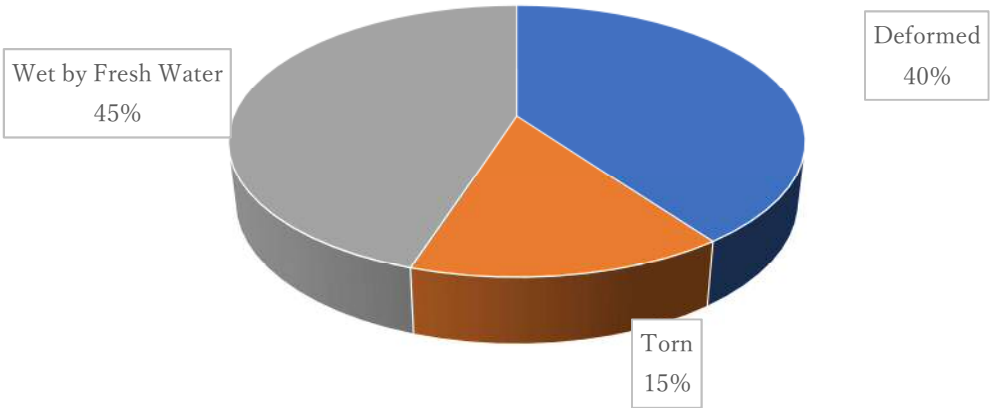


Chart 10-1: Type of damage of Medical Item

[10-2] Location of damage occurred

Occurred location	Ratio
Devanning Operation	5.00%
In Transit	60.00%
Storage at Airport	5.00%
Vanning Operation	30.00%
Total	100.00%

Table 10-2: Location of damage occurred of Medical Item

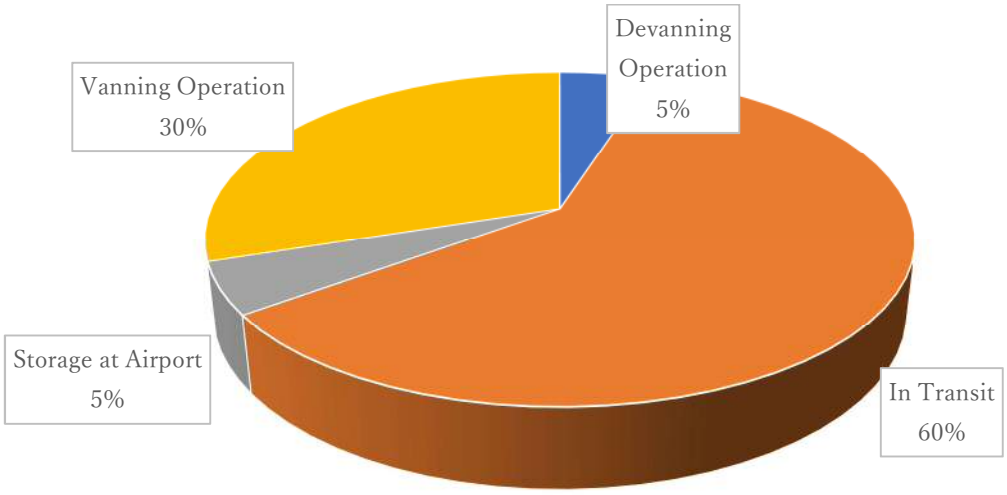


Chart 10-2: Location of damage occurred of Medical Item

[10-3] Cause of damage

Cause of damage	Ratio
Container sustained damage/malfunction	30.00%
Humidity change/Temperature change gap	5.00%
Impact/Shock during transportation	25.00%
Improper Storage	5.00%
Improper Stowage/Loading	5.00%
Rough handling	30.00%
Total	100.00%

Table 10-3: Cause of damage of Medical Item

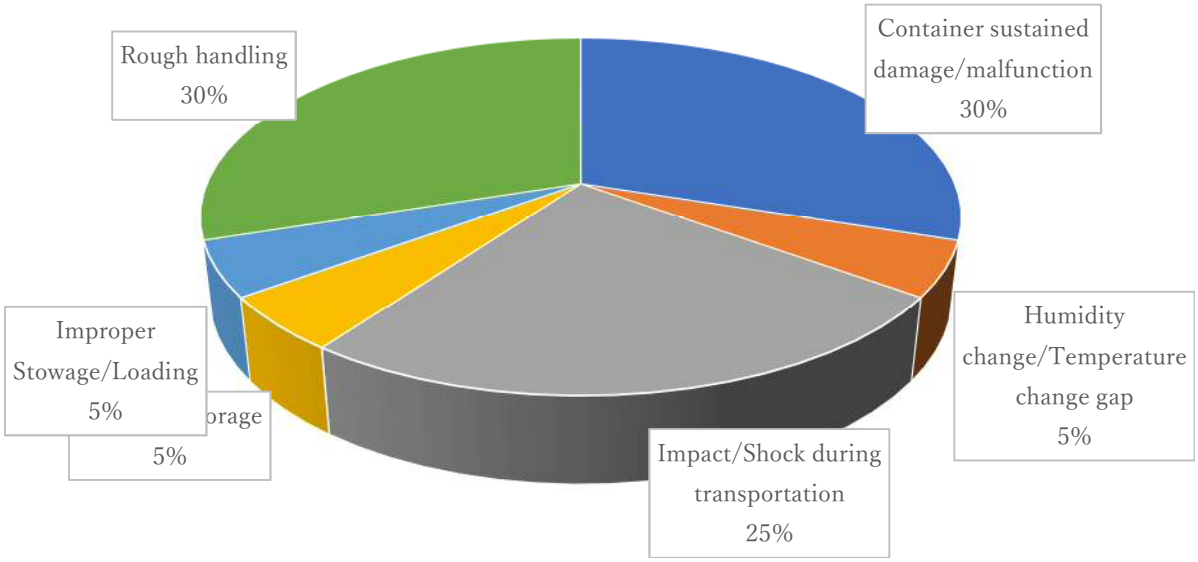


Chart 10-3: Cause of damage of Medical Item

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DATABASE OF DAMAGE CARGO

DATA ANALYSIS OF 2020～2022

PRODUCED BY NKKMM

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2. Database Subject

The subject in this database included damage cases from 2020 to 2022, which were carried as directly request or as a third-party inspection agency for import shipment, and we extracted and analyzed them, mainly for container cargo.

This database consists of data collected under the above conditions, and it is only a reference value because it is a part of import cargo accidents and is not complete.
In addition, this data does not represent the frequency of accidents in cargo imported into Myanmar, as it only contains information on accidents which have been inspected by NKKMM.

3. Database Categories

①Transportation Method

- Vessel
- Flight
- Train/ Truck? Other methods

②Cargo Categories

- Food (Frozen Food, Food material, Consumption Food, Fruit)
- Machinery (Parts, Motor, Machine, Used Machine)
- Paper (Paper, Waste paper)
- Chemical Product (Chemical Product, Chemical Liquid)
- Metal Material (Copper, Zinc, Aluminum)
- Steel (Steel coil, Steel roll, Steel structure)

③Packages

- Bare
- Wooden case

- Bag
- Carton
- Palletized
- Drum
- Bulk
- Roll
- Bundle

④Location where damage occurred

- Storage at Loading Port
- Loading operation
- Vanning operation
- Inland transportation
- In transit
- Transshipping
- Unloading operation
- Devanning operation
- Storage at Discharging Port
- Storage at Airport (Loading / Discharging)
- During Processing

⑤Damage Type

- Deformed (Dented / Crushed / Bent / Broken)
- Leakage
- Torn
- Wet by sea water
- Wet by fresh water
- Humidity and / or Temperature change gap (Container / Cargo sweat)
- Molded
- Rusted
- Stained
- Oxidized
- Contaminated (Contamination with insects / Odor / Foreign matter)
- Deteriorated
- Missing / Non-delivery / Pilferage
- Operation failure / Malfunction
- Burnt
- Quality degraded
- Discrepancy
- Melted / Thaw

⑥Cause of Damage

- Impact / Shock during transportation
- Rough handling
- Container sustained damage / Container malfunction
- Poor lashing
- Improper Stowage / Loading
- Poor cleaning
- Rain
- Flooding
- Fire
- Rise in temperature
- Humidity change / Temperature change gap
- Cargoes nature
- Vessel / container submerge
- Thief
- Others

4. Detail damage case based on cargo types

1. Summary of Type of Damage from 2020 to 2022

Type of Damage	Ratio
Burnt	2.70%
Deformed (Dented / Crushed / Bent / Broken)	29.73%
Leakage	2.70%
Melted / Thaw	2.70%
Missing / Non-delivery / Pilferage	2.70%
Stained	2.70%
Torn	8.11%
Wet by fresh water	45.95%
Wet by sea water	2.70%
Total	100.00%

Table 1: Summary of Type of damage from 2020 to 2022

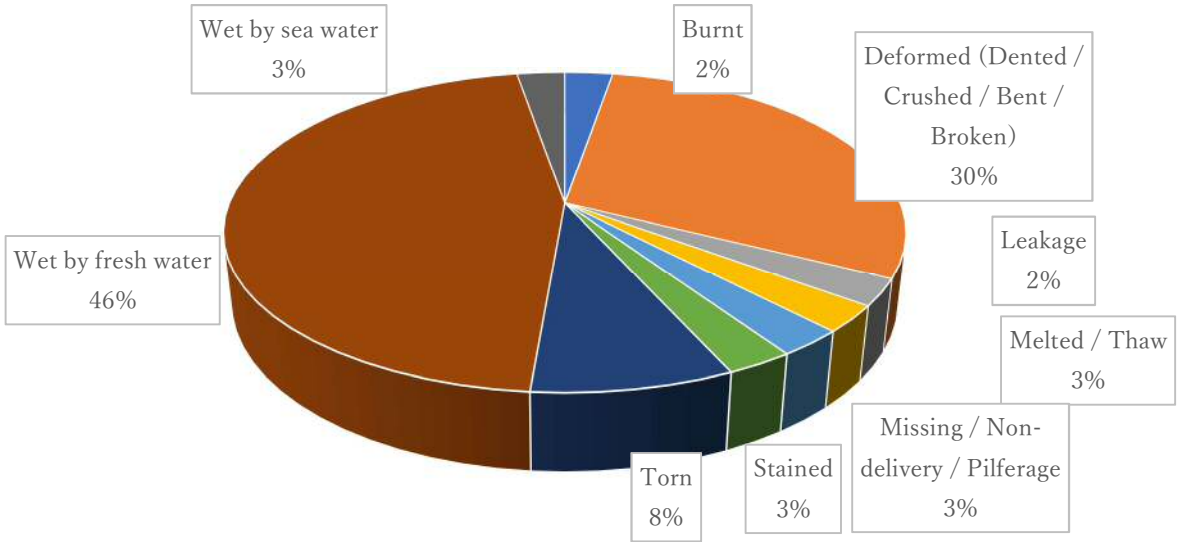

Chart 1: Summary of Type of damage from 2020 to 2022

2. Food (Frozen Food, Food material, Consumption Food, Fruit)

[2-1] Type of damage

Type of Damage	Ratio
Melted / Thaw	12.50%
Stained	12.50%
Torn	12.50%
Wet by fresh water	62.50%
Total	100.00%

Table 2-1: Type of damage to Food cargo

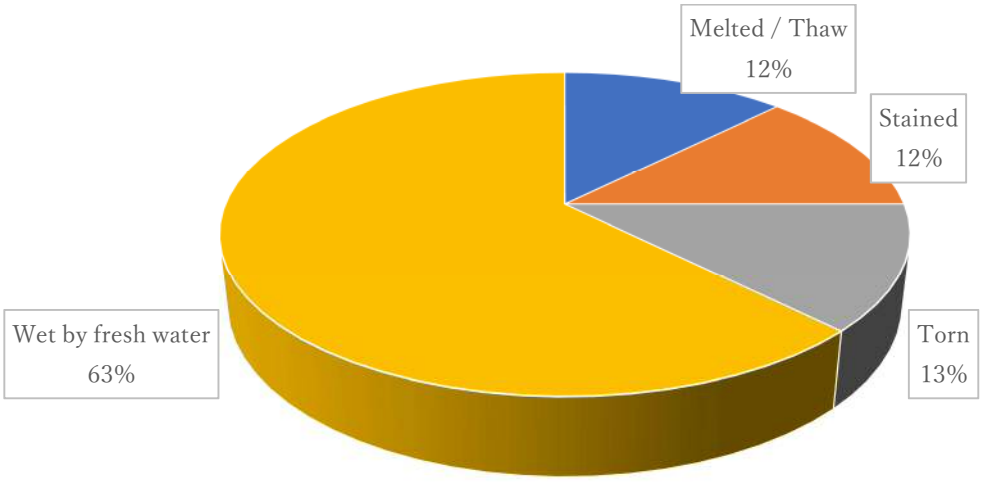

Chart 2-1: Type of damage to Food cargo

[2-2] Location of damage occurred

Location occurred	Ratio
In transit	62.50%
Storage at Discharging Port	37.50%
Total	100.00%

Table 2-2: Location of damage occurred of Food cargo

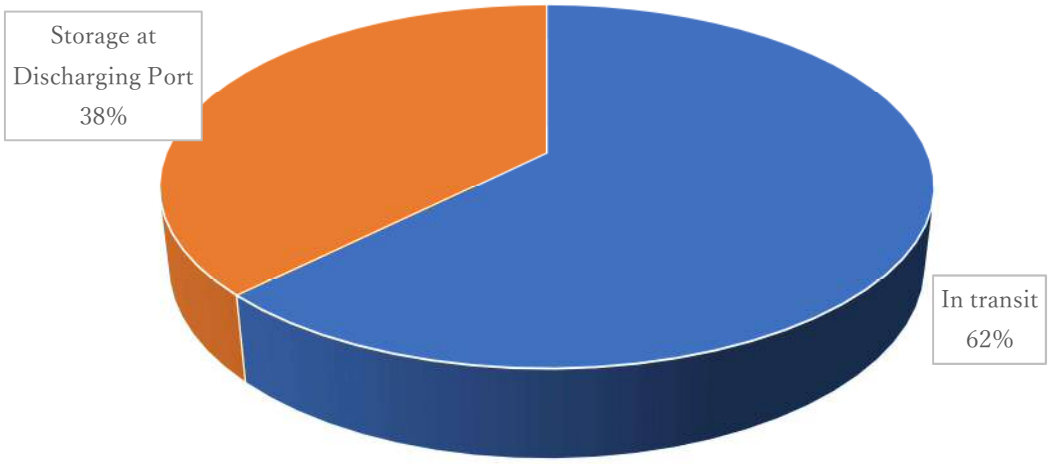

Chart 2-2: Location of damage occurred of Food cargo

[2-3] Cause of damage

Cause of damage	Ratio
Container sustained damage / Container malfunction	37.50%
Flooding	25.00%
Impact / Shock during transportation	12.50%
Poor cleaning	12.50%
Rise in temperature	12.50%
Total	100.00%

Table 2-3: Cause of damage of Food cargo

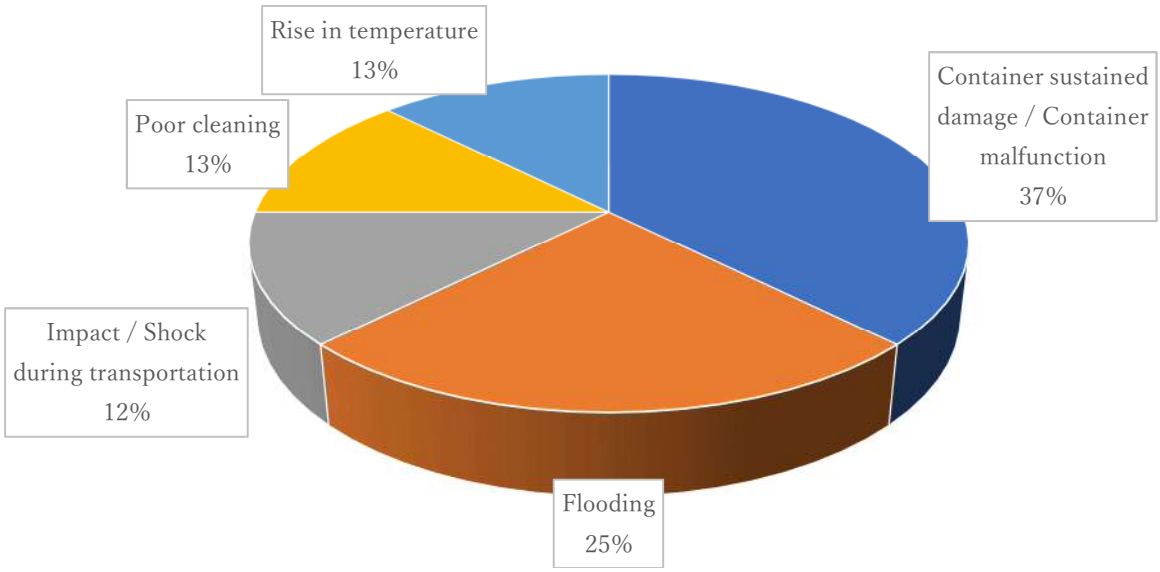

Chart 2-3: Cause of damage of Food cargo

3. Machinery (Parts, Motor, Machine, Used Machine)

[3-1] Type of damage

Type of Damage	Ratio
Deformed (Dented / Crushed / Bent / Broken)	66.67%
Wet by fresh water	33.33%
Total	100.00%

Table 3-1: Type of damage to Machinery cargo

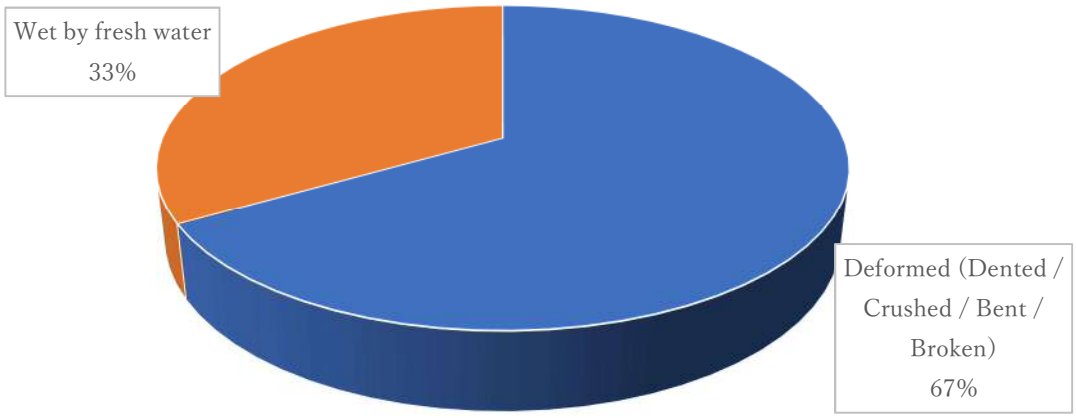

Chart 3-1: Type of damage to Machinery cargo

[3-2] Location of damage occurred

Location occurred	Ratio
In transit	33.33%
Inland transportation	33.33%
Transhipping	33.33%
Total	100.00%

Table 3-2: Location of damage occurred of Machinery cargo

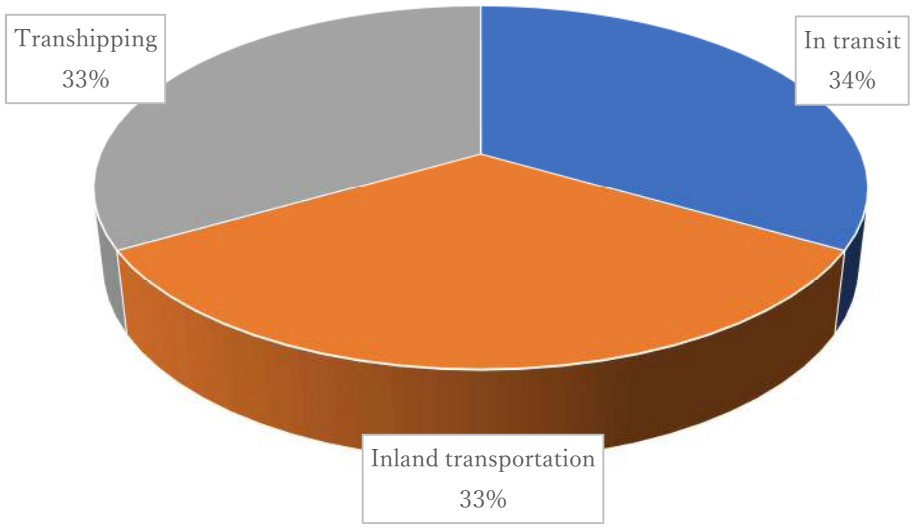

Chart 3-2: Location of damage occurred of Machinery cargo

[3-3] Cause of damage

Cause of damage	Ratio
Impact / Shock during transportation	33.33%
Rain	33.33%
Rough handling	33.33%
Total	100.00%

Table 3-3: Cause of damage of Machinery cargo

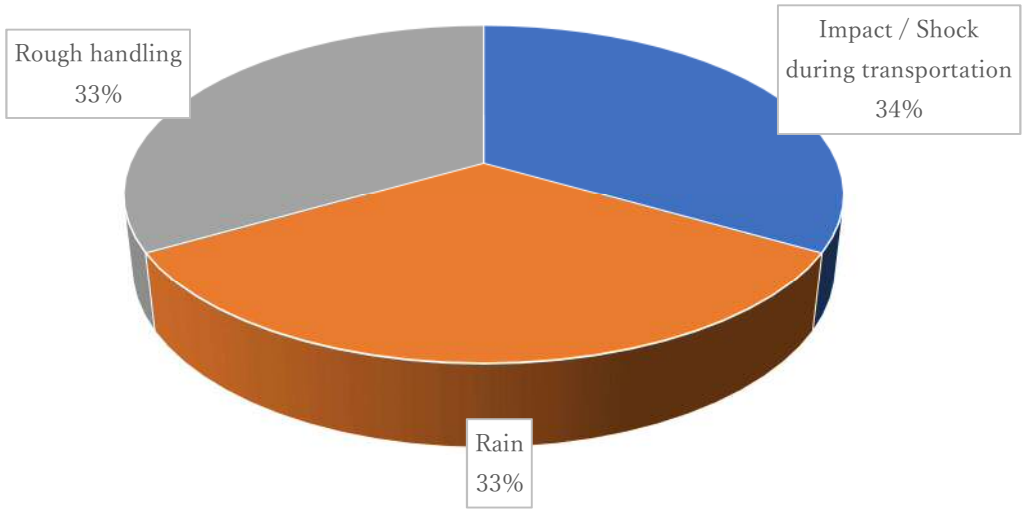

Chart 3-3: Cause of damage of Machinery cargo

4. Paper (Paper, Waste paper)

[4-1] Type of damage

Type of Damage	Ratio
Wet by fresh water	100.00%
Total	100.00%

Table 4-1: Type of damage of Paper cargo

[4-2] Location of damage occurred

Location occurred	Ratio
In transit	50.00%
Storage at Discharging Port	50.00%
Total	100.00%

Table 4-2: Location of damage occurred of Paper cargo

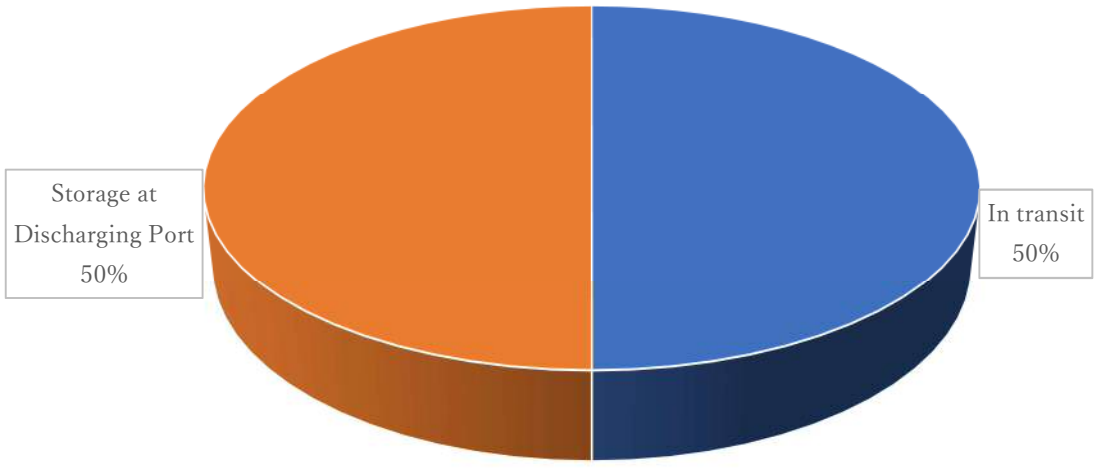

Chart 4-2: Location of damage occurred of Paper cargo

[4-3] Cause of damage

Cause of damage	Ratio
Container sustained damage / Container malfunction	33.33%
Flooding	50.00%
Rain	16.67%
Total	100.00%

Table 4-3: Cause of damage of Paper cargo

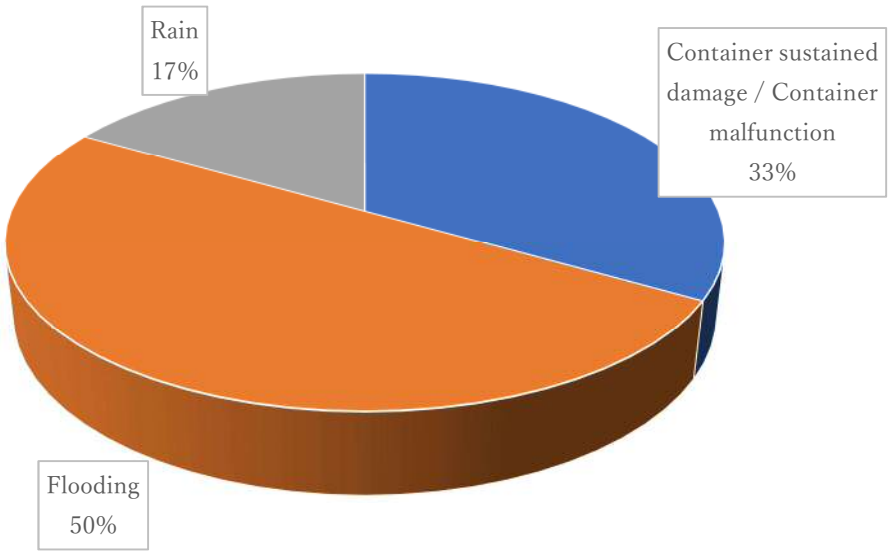

Chart 4-3: Cause of damage of Paper cargo

5. Chemical Product (Chemical Product, Chemical Liquid)

[5-1] Type of damage

Type of Damage	Ratio
Missing / Non-delivery / Pilferage	16.67%
Torn	33.33%
Wet by fresh water	33.33%
Wet by sea water	16.67%
Total	100.00%

Table 5-1: Type of damage of Chemical Product

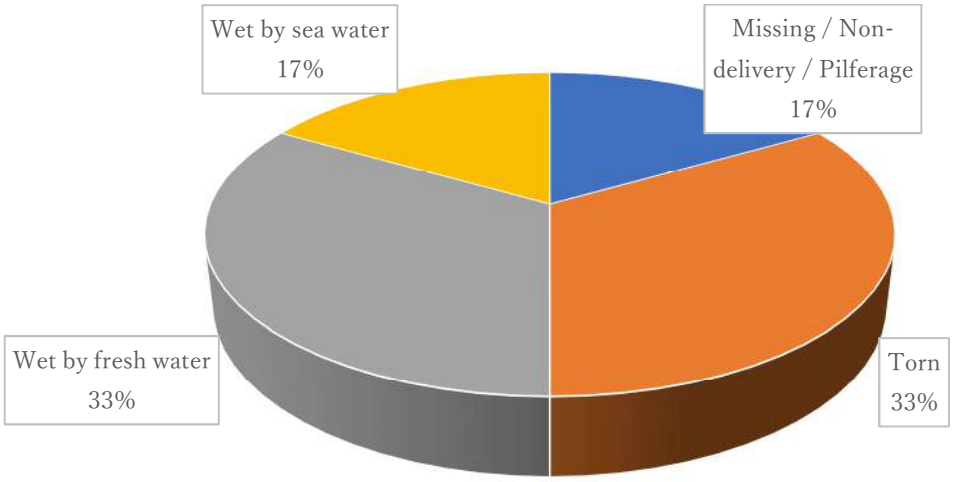

Chart 5-1: Type of damage of Chemical Product

[5-2] Location of damage occurred

Location occurred	Ratio
In transit	83.33%
Vanning operation	16.67%
Total	100.00%

Table 5-2: Location of damage occurred of Chemical Product

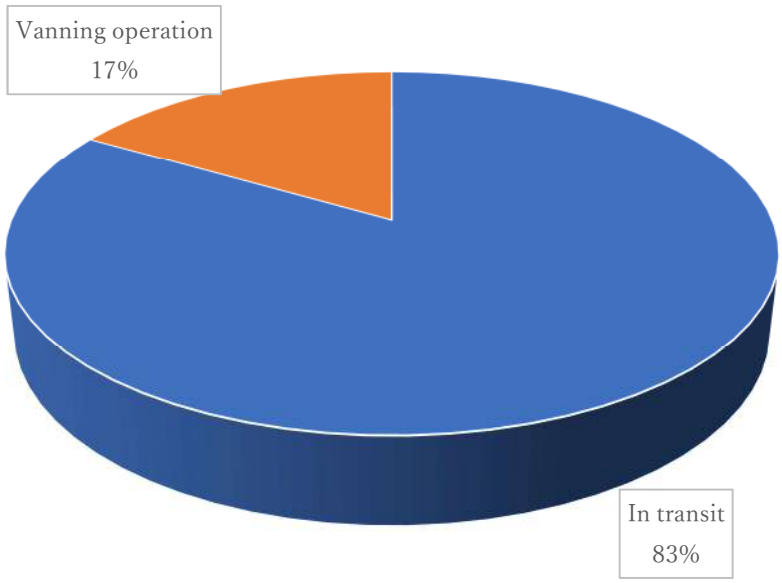

Chart 5-2: Location of damage occurred of Chemical Product

[5-3] Cause of damage

Cause of damage	Ratio
Container sustained damage / Container malfunction	20.00%
Flooding	40.00%
Impact / Shock during transportation	40.00%
Total	100.00%

Table 5-3: Cause of damage of Chemical Product

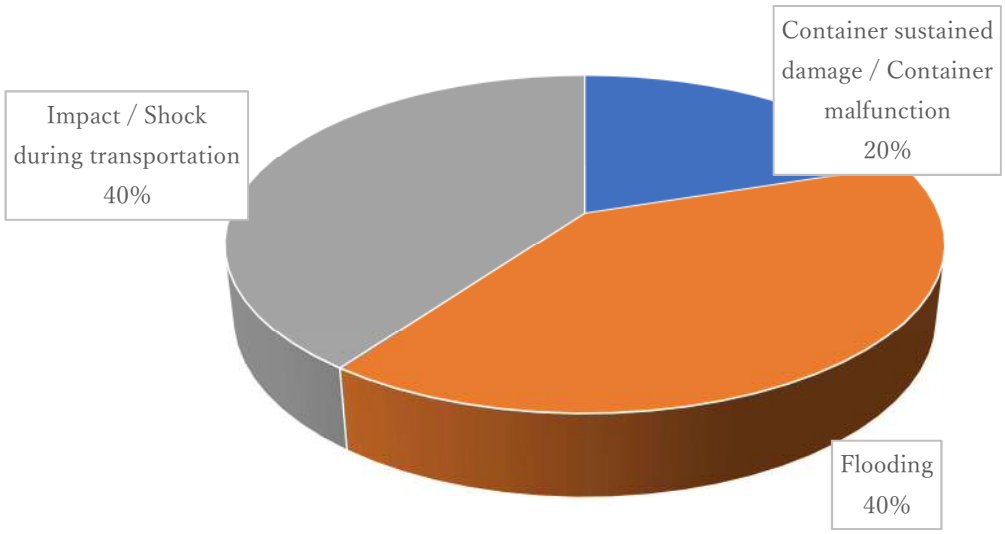

Chart 5-3: Cause of damage of Chemical Product

6. Material (Leather, Shoe Material, Fabric)

[6-1] Type of damage

Type of Damage	Ratio
Burnt	25.00%
Deformed (Dented / Crushed / Bent / Broken)	25.00%
Wet by fresh water	50.00%
Total	100.00%

Table 6-1: Type of damage of Material

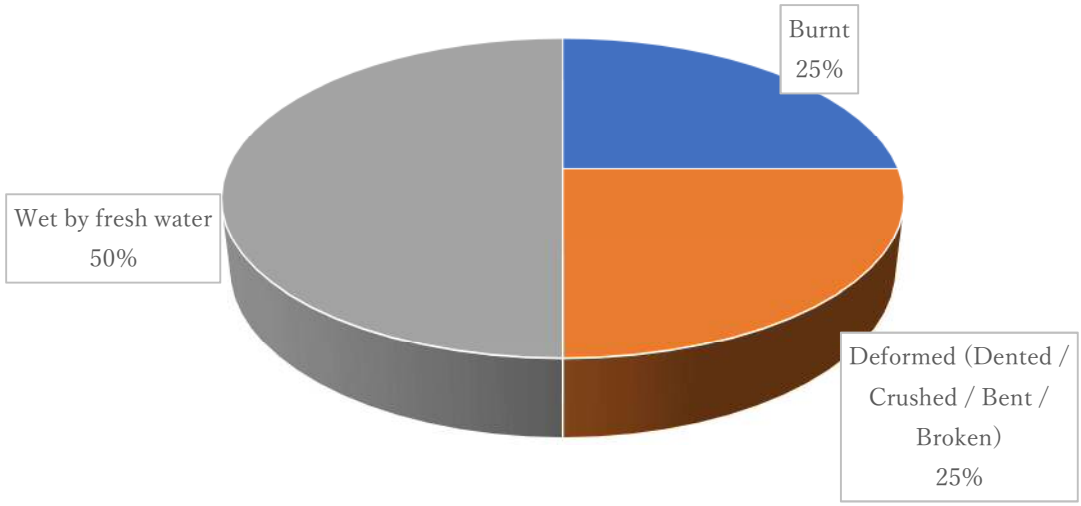

Chart 6-1: Type of damage of Metal Material

[6-2] Location of damage occurred

Location occurred	Ratio
During Processing	25.00%
In transit	50.00%
Storage at Discharging Port	25.00%
Total	100.00%

Table 6-2: Location of damage occurred of Metal Material

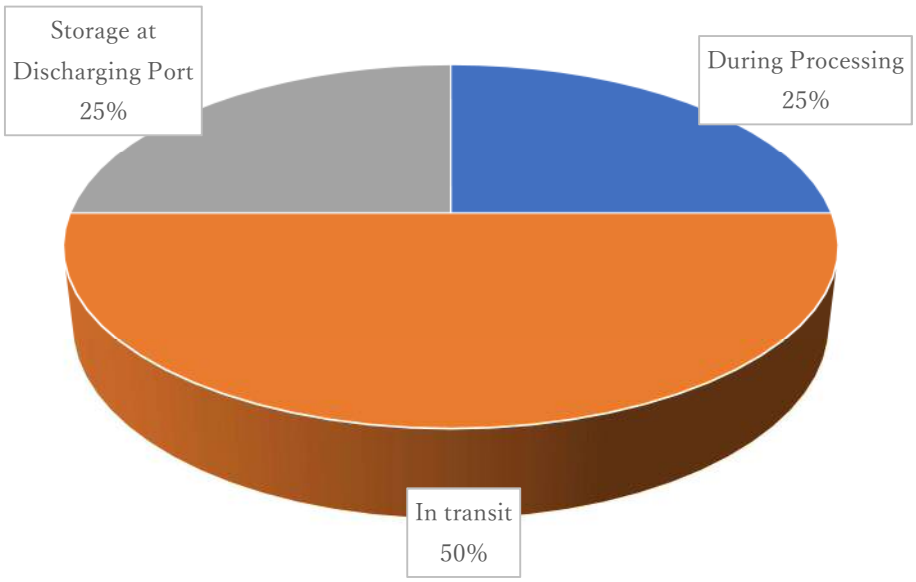

Chart 6-2: Location of damage occurred of Metal Material

[6-3] Cause of damage

Cause of damage	Ratio
Container sustained damage / Container malfunction	50.00%
Fire	25.00%
Impact / Shock during transportation	25.00%
Total	100.00%

Table 6-3: Cause of damage of Metal Material

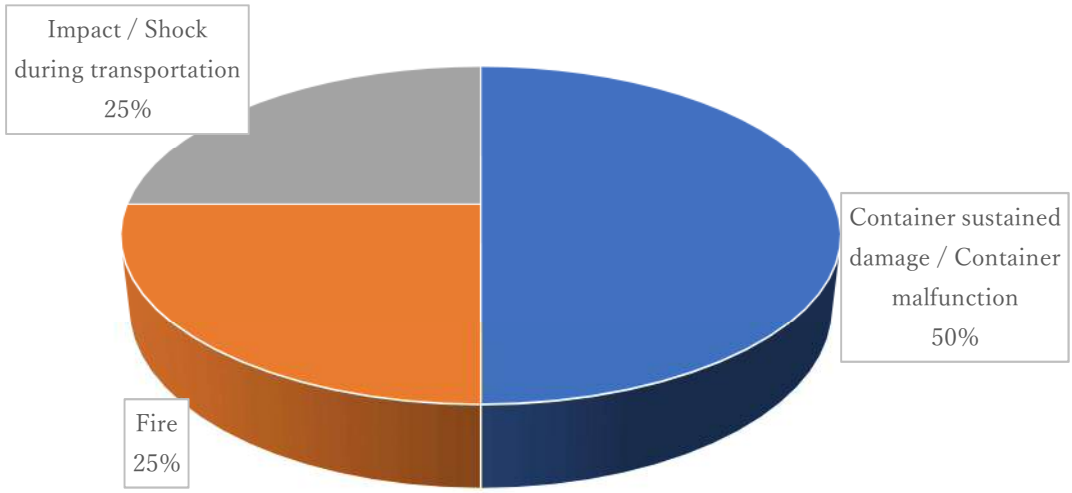

Chart 6-3: Cause of damage of Metal Material

7. Steel (Steel coil, Steel roll, Steel structure)

[7-1] Type of damage

Type of Damage	Ratio
Deformed (Dented / Crushed / Bent / Broken)	100.00%
Total	100.00%

Table 7-1: Type of damage of Steel cargo

[7-2] Location of damage occurred

Location occurred	Ratio
In transit	100.00%
Total	100.00%

Table 7-2: Location of damage occurred of Steel cargo

[7-3] Cause of damage

Cause of damage	Ratio
Impact / Shock during transportation	66.67%
Poor lashing	16.67%
Rough handling	16.67%
Total	100.00%

Table 7-3: Cause of damage of Steel cargo

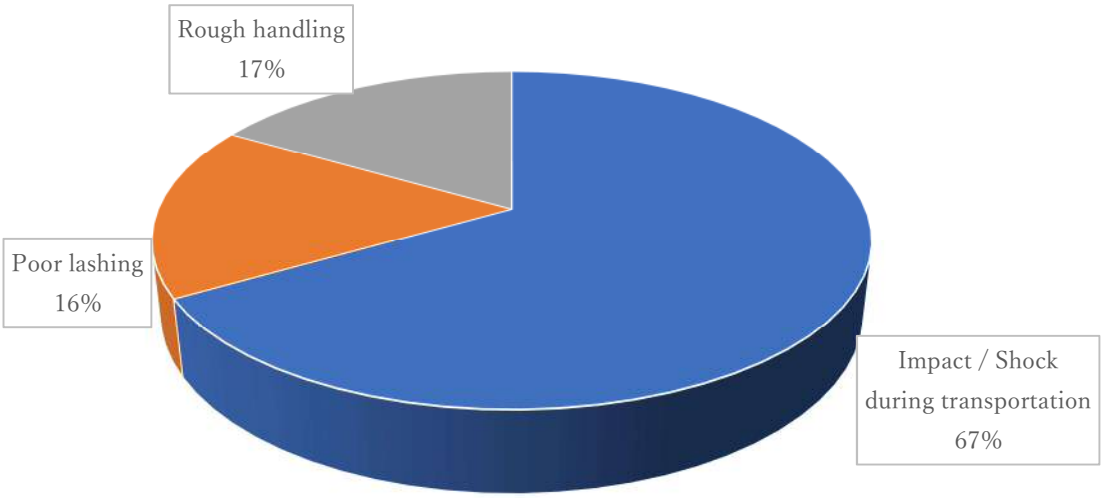

Chart 7-3: Cause of damage of Steel cargo