



VIAREGGIO RAIL ACCIDENT: CONCLUSION OF THE ITALIAN FIRST INSTANCE COURT



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JUST CULTURE & JUDICIARY – Quo Vadis?
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Viareggio Accident - 3D Simulation

IL TIRRENO



UNIVERSITÀ DI PISA
DIPARTIMENTO DI MECCANICA

ITALIA - 050/2099611 - 050/2099612

Details



The freight train No. 50325, composed of a railway locomotive and 14 tank wagons carrying LPG (*Liquefied Petroleum Gas*), at speeds of about 90 miles an hour, has derailed at **Viareggio railway station** (Tuscany, central Italy) on **29th June 2009**, in the night.

Details



The freight train was transporting LPG from Treocate (in the north of Italy) to Gricignano (in the south of Italy), when it derailed.



Details



In particular, the **first wagon** *derailed* on plain track. This wagon hit the platform of the train station and overturned to the left, *pulling another four tank cars with it*. These four wagons also derailed and overturned.

The two following cars derailed too, but remained upright.

The last four wagons did not derail, remaining intact on the railroad.

After the crash, a hole opened, releasing more than 45 t of LPG, that caused a *flash fire*, engulfing the station and nearby areas of the Tuscan town





Details



A large area surrounding the station of Viareggio was damaged by **fire** caused by LPG self-combusting, carried by the train.



Details

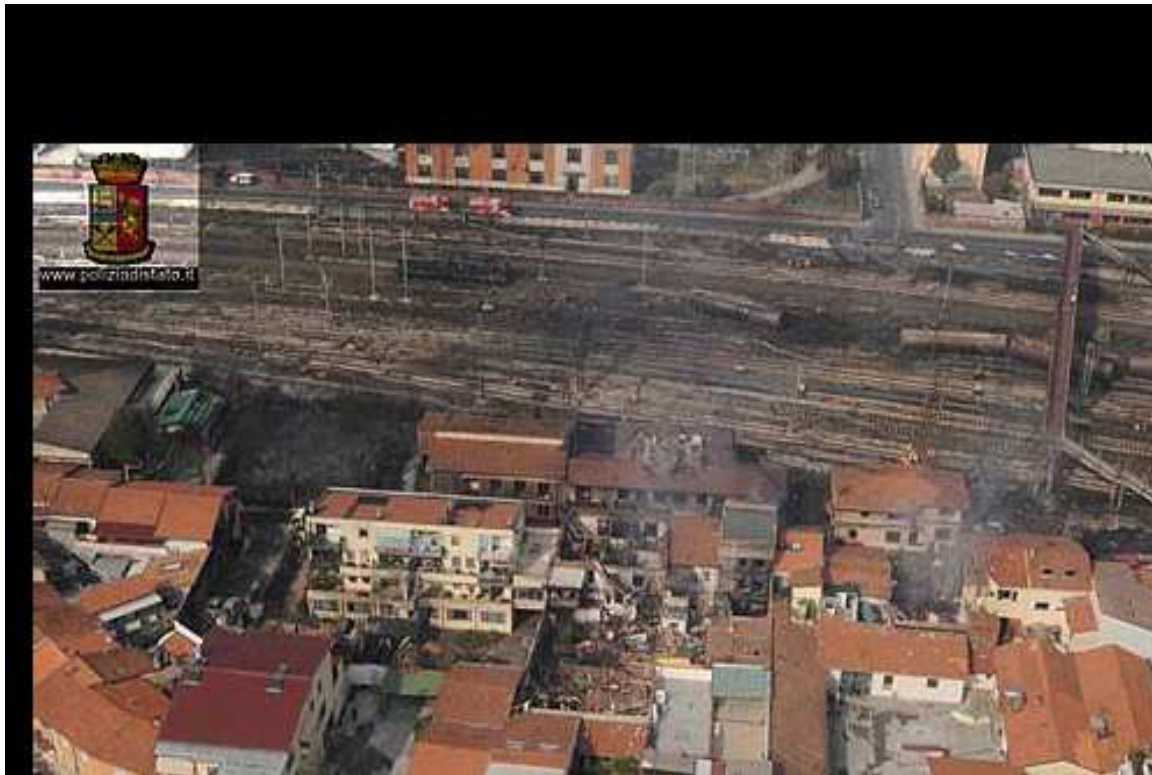


The force of the blast brought down two small blocks of flats (in Terminetto quarter), where many of the victims lived.

Some houses collapsed.



Random effect of gas penetration in the buildings exposed to the dense gas dispersion





The accident brought very serious consequences.

Thirty-two (32) people were killed in their sleep or when they were in the street alongside the train station (fatalities),

and **twenty-six (26) were injured** (casualties).

Many of the injured suffered severe burns.

About 1,000 people have been evacuated from their homes as a precaution

The worst rail accident in Italy in over 30 years

The Viareggio disaster is *the worst **rail accident** in Italy in over 30 years*,
since the collision between two trains
in Murazze di Vado, near Bologna, on
15 April **1978**, which **killed**
48 people.





Extremely severe penalties



For this accident, extremely severe penalties have been imposed by the **Court of Lucca (a first instance Court)** on **executives** of the Italian State railway companies and of foreign companies, **on 31st January 2017.**

**Italian law:
three sets of proceedings**



Under Italian law, the decision taken by the **court of first instance** can be ***appealed twice*** before the ruling is final and the jail sentence has to be served.

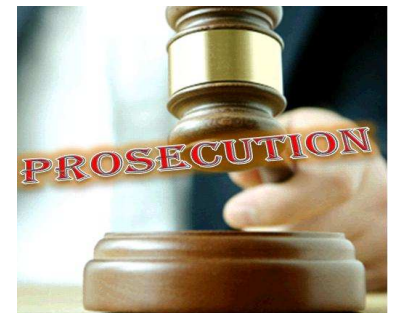
Extremely severe penalties



ITALIAN COMPANIES EXECUTIVES

*Former managing directors (CEOs) of Italian State Railway (FS Logistica and Trenitalia) and of the rail network company (RFI - Italian Rail Network) were sentenced to **seven years in prison** each.*

Prosecutors asked for them, respectively, 16 and 15 years.





Extremely severe penalties



FOREIGN COMPANIES EXECUTIVES

The *managing directors (CEOs)* of GATX Rail Austria (the owner of the tank cars) and of GATX Rail Germany (the company that hired the wagons to FS Logistica) and the *head for the maintenance system of the GATX Rail*, that checked the wagons were sentenced to about **nine years** in prison.



CRIMES

In total **33 individuals** and **nine companies** were tried on various charges, including:

- **rail disaster** (Art. 430 c.p.)
- **multiple manslaughter** (Art. 589, par. 2, c.p.),
- **culpable injuries** (Art. 590, par. 3, c.p.),
- **culpable fire** (Art. 449 c.p.) etc.

The court issued *10 acquittals* in the trial.



What caused the disaster?



According to the official conclusions of the investigatory commission and technical-legal consultants,

the cause of the Viareggio accident has been the **structural failure of a bogie axle** on the first tank wagon derailed.

It was found that the rupture was due **to fatigue and wear, despite having passed the checks.**

The cause of the disaster





Main cause/ Subsequent events



The main cause: structural failure of an axel of the first tank wagon.

The subsequent events: derailment and overturning of wagons, crashing of them into '*an element of infrastructure*', that cut the metal, causing a hole and the consequent LPG release, that provoked an explosion and fire, leading to deaths and injuries.



Detail of the cut produced in the metal casing of the first tank car.





The cause of the disaster



The Court of Lucca stated that:

*“if the **main cause** of the Viareggio accident was a broken axel of the first wagon, a **sequence of events** was envolved from it, causing the train derailment that - in turn - involved overturning and crashing of the tank wagon into an element of infrastructure, so the **main cause** and the subsequent events are to be considered as **contributory causes** identified within the framework of risk management in railway transport”.*



Who is responsible?



The national and international **rail system** is
in the dock



Grounds



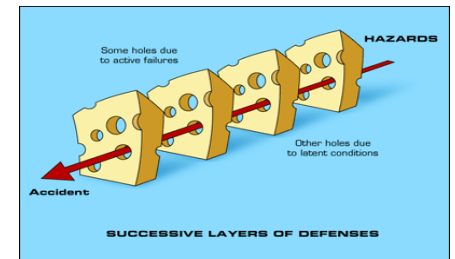
In the grounds of the judgment, the judges of Lucca said that the Viareggio disaster

“has not been an unforeseeable and exceptional event,

but an accident caused by a tragic chain of consequential events, avoidable

- by compliance with well established technical rules created in order to ensure the railway safety and

- by paying the greatest possible attention to the warning signals (indicators) appearing before the accident and able to foreclose the disaster”





A comment



The Court refers to
technical rules
that have not been observed



and

warning signals
that have been ignored



Grounds



What are the “**technical rules**”?

The Court refers **both**
to *railway safety **special rules***
in the field of the **transport of dangerous goods**
by rail, in particular of *dangerous chemicals and*
combustible materials (such as LPG)
and
to the **Italian rules** regarding **health and safety at**
work



TECHNICAL RULES

- a) legislation applicable to the **transportation of dangerous goods** (largely concerning the cars), common to different means of transport
- b) **rules on the circulation of trains**, applicable to all types of railway transport.



INTERNATIONAL RULES

The **Convention concerning International Carriage by Rail (COTIF)**, signed in Bern on 9 May **1980**, ratified by Italian Law No 976/1984, as amended by the Vilnius Protocol (n. 13) of 3 June 1999

The COTIF '99, in force at international level from 1st July 2006 , has been ratified by Italian Law No 174/2014 (after the disaster): it is not applicable



Differences between COTIF 1980 and 1999



COTIF 1999
Convention concerning
International Carriage
by Rail

as amended
by the Vilnius Protocol
in force from 1.7.2006

applicable from 01.01.2011

COTIF 1980:

Obligations of the wagon **keeper** (K):

The keeper must furnish proof to user Railway Undertakings (on request) that the *maintenance of his wagons is compliant with the legislation in force.*

The keeper must allow the RUs to conduct *any inspections on wagons* that may be necessary



Obligations of the **Railway Undertaking** (RU):

Each RU shall handle wagons with *care and due diligence* and shall carry out the *needed inspections*

Railway undertaking

DEFINITION



Railway undertaking shall mean any *private or public undertaking* that makes use of, or intends to make use of, the railways and has access to traction.

Concretely, this means that an *infrastructure maintenance company* may also be considered a railway undertaking.

(Directive 95/18/EC of 19 June 1995 on the licensing of railway undertakings)



Owner/User of the wagons

Owner/keeper: **GATX** (*General American Transportation Corporation*) through its subsidiary company **GATX Rail Austria**, in Europe

RU: **FS Logistica** and then **FS Trenitalia** (under a *hire contract*) and **RFI**



INTERNATIONAL RULES

In national and international traffic within the scope of the COTIF, the **General Contract of Use for Wagons (GCU)** (ed. July 2006) also applies.

According to this GCU the wagons are *maintained* by the **keeper**, responsible for their *maintenance* while **the RU (Railway Undertaking)** is required to carry out all needed *safety checks* and is responsible *for damage resulting from their use*.



SAFETY CHECKS



According to the COTIF, a (technical)
**Regulation concerning the International
Carriage of Dangerous Goods by
Rail (RID)** (Appendix C of COTIF) has
been issued.

(transposed into EU law by the Directive
96/49/CE, updated every two years





EU LEGISLATION

DIRECTIVE 2004/49/EC on a **common regulatory framework for safety** on the Community's railways (transposed into Italian law by Legislative Decree No 162/2007).

This Directive distinguishes between



“operational responsibilities” of the infrastructure manager and railway undertakings (RUs) and ***functions of monitoring, supervision and regulation*** of the national safety authorities.



ITALIAN LEGISLATION

Legislative Decree 13th January 1999, no 41, that has transposed Directive 96/49/CE (on the RID) into national legislation.



See also **Ministerial Decree** (by the Italian Minister of Transport) **of 19th March 2008**, which implemented the edition 2007 of the RID and the **Legislative Decree no 162/2007** establishing the National Rail Safety Agency (ANSF).

Consolidated Text on Safety and Health of Workers

Italian Legislative Decree no. 81/2008



This Text applies to **all kinds of activities and risks**, as well as **to all workers**.

The accused contested the applicability of this Text to the Viareggio disaster because it doesn't apply to the "means of transport": they are not considered as places of work.

Inter alia, this Text requires to undertake a **risk assessment**





Contribution to the accident

The Italian executives were held
responsible

for *poor infrastructure* and
inadequate risk prevention systems.

Consequently, they were deemed
**to have contributed to the train
derailing and exploding.**

Companies liability

In particular, the head of the Italian rail network company RFI has been accused of

“non-compliance with legislation, regulations, orders and framework ordinances,

as well as

technical, evaluation, pro-active and operative omissions”.

The Court said:

“he must have been aware that were not made appropriate risk analysis and assessment related to the movement of wagons carrying dangerous goods on the entire national network”

Companies liability

The Italian Court also argued that:

“these omissions are expressions of

***a) a business strategy** based on
specific managerial choices, in particular
with regard to maintenance,
but also of*

***b) organisational and evaluation deficiencies**,
dating back many years, attributable directly to
the leaders and to the CEO of RFI”*

Companies liability

In fact, with regard to the first aspect (business strategy), the Court noted that

*“the Italian companies have made **substantial gains** through the economic saving derived **from failing to take technical measures**”.*

Companies liability

The investigation has revealed that the tank wagons have been **hired** by foreign companies because Trenitalia FS did not own freight wagons for the carriage of dangerous goods.

The hire cost of one wagon was very cheap, and included “*the economic costs deriving from maintenance activities*”.

Risk analysis and assessment

With regard to the second aspect (deficiencies), according to the Court of Lucca, the **risk analysis and assessment** would have had to cover the **general risk of derailment**, due to rupture of rolling stock components and other **specific risks** (explosion, fire etc.) related to the special type of railway transport (*carriage of dangerous goods*)

Companies liability

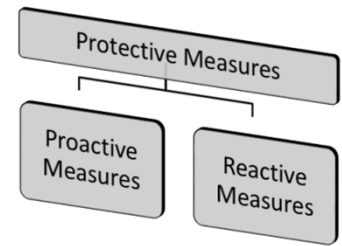
According to the Court reasoning, in this case,
*“who held a (**safety**) **position** was well aware of violations and absence of safety. He could have predicted the tragic consequences as a result of the **violation of precautionary rules** (and measures) and could have avoided such fatal events”.*



The Court considers that, under the above-mentioned different legal sources, the ***owner***, the ***user***, the ***entity in charge of maintenance*** of the wagons are all responsible on the basis of their “**safety position**”, that includes *obligations* to prevent and to protect from events that could endanger public safety.

**PUBLIC
SAFETY**

Preventive and protective measures



Prevention implies that the measures are adopted before the accident occurs (*ex ante approach*)

Protection implies that the act is happening or has occurred, and measures are aimed to mitigate the consequences (*ex post approach*)



LPG



In this special case, the exceptionally dangerous nature of LPG (flammable mixtures of hydrocarbon gases used as fuel) required a **higher duty of care** and a **high standard of diligence**.



Acceptable risk



The existence of an allowed level of risk, *in particular in high-risk activities*, did not exempt from responsibility,

but – on the contrary –

required its enhancement, through

more stringent “precautionary rules”

Violation of precautionary rules

In this respect, the Court has previously verified:

*“that the **violation of precautionary rules** was the **cause** of this specific adverse event*

and

that the rule of law infringed was aimed to prevent the event which had taken place”



Taking Precautionary Measures

Conclusion



What is the leitmotive of this judgment ?

In the current **risk society**, the community expects, or rather demands, that all who are in a safety position (*front line operators* or *top managers*, but also lessee/*charterers* of means of transport), ***take all measures in order to avoid serious harm,***

especially when they are involved in extremely dangerous activities (Article 2050 Italian Civil Code), such as the transport of dangerous goods.

Thank You for
Your Attention