

# **Genetic testing and occupational risks: impact on the prevention and compensation of occupational diseases**

by

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## **INTRODUCTION**

In this article we will analyse the stakes involved in using genetic testing in the workplace from a legal point of view, and more specifically with regard to the current legal framework of occupational health prevention and the compensation of occupational diseases.

The risks of genetic selection and discrimination have been rightly denounced<sup>1</sup> time and time again and, in Belgium in particular, specific measures have been adopted. Indeed, the Law of 28 January 2003 on medical examinations<sup>2</sup> prohibits the use of predictive genetic examinations within the framework of employment relationships.

After clarifying several concepts, we will analyse the scope of this legislation as well as how it fits in with the current occupational health prevention policy. The last two sections will be devoted to analysing the

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<sup>1</sup> Convention of the Council of Europe for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine or Convention on Human Rights and Biomedicine, adopted on 19 November 1996; Opinion No. 18 of the European Group on Ethics in Sciences and New Technologies by the European Commission, 28 July 2003; Draft International Declaration on Human Genetic Data, UNESCO, Paris, 28 August 2003.

<sup>2</sup> *Loi du 23 janvier 2003 relative aux examens médicaux dans le cadre des relations de travail* (Law of 23 January 2003 on medical examinations in the framework of employment relationships), *Moniteur belge*, 9 April 2003.

existing legal framework in the field of occupational health prevention and compensation and their possible transformation. Our aim is to give a few suggestions for thought in view of the adoption of an appropriate regulatory framework.

## **METHOD**

We think that the use of genetic testing contributes to the transformation of the notion of occupational risk. We hypothesise that the conjunction between this transformation and the current economic and social context as well as the evolution of the labour market might give rise to a transformation of risk prevention and compensation models such as they presently exist.

This hypothesis will be confronted with the analysis of the present legal framework and doctrine put in perspective within the current economic and social framework.

## **RESULTS AND DISCUSSION**

### **I - Genetic information, testing and contextualisation**

#### *1°- Genetic susceptibility and monitoring testing*

The notion of “genetic testing” is far from being univocal. A distinction is generally made between genetic susceptibility testing and genetic monitoring testing.

Susceptibility tests aim to identify, at the genome level, some genes involved in pathological processes. These can be either monogenic diseases (very low incidence) or polygenic or multifactorial diseases. The former result from a defect in a single gene (*e.g. Huntington’s disease*), while the latter are caused, in a much more complex way, by the joint action of several genetic and environmental factors. As far as monogenic diseases are concerned, we can say that once this gene has been identified, it is possible to know with an absolute certainty that this person will be suffering from this disease one day. In the second case, testing only reveals that a person is more likely to develop some diseases.

By contrast, genetic monitoring tests concern the analysis of the early effects of some substances – said to be ‘genotoxic’ or ‘mutagenic’ – on the genetic material. These are the early effect biomarkers. Such early genetic “damage” could reveal the existence of a higher risk of developing a disease (*e.g. some occupational cancers*).

## *2°- Genetic testing: risk anticipation and individualisation*

Our initial postulate rests on the following points: genetic information gives rise to an anticipation and individualisation of occupational risks, or even a personification of them.

Indeed, the aim pursued when one intends to use genetics is to detect the risk as soon as possible, that is to say, in this particular case, before the first symptoms of the disease appear. In this way, susceptibility testing aims to identify the risk related to the gene(s) before the first symptoms appear, or even before birth (prenatal genetic testing) or before the embryo implantation (preimplantation genetic testing). In the same logic, monitoring testing aims to observe a very early development stage of the disease which would appear at the level of the DNA of an exposed worker. On this point, we think that genetic susceptibility tests and genetic monitoring tests pursue the same aim.

Genetic information also ratifies a risk individualisation insofar as it tends to categorise workers according to certain determined genetic criteria. The aim can be to identify a predisposition specific to a person (genetic susceptibility testing). In this way, there would be the sick persons, the healthy persons and the persons who are carriers of some genes. The aim can also be to identify a group of exposed workers within a given population who are more “at risk” (genetic monitoring testing).

The difference between the two types of tests lies in the fact that in the first case, we generally speak only of a simple probability, that is to say a predisposition to the disease, while in the second case, the analyses will be based on the observation of the early effects of an exposure that has occurred. In a way, we can say that the pathological process is in progress.

## *3°- Contextualisation*

It is important to remember that the problem of carrying out genetic testing lies within the framework of employment relationships. This will indeed have a considerable influence on the way in which the questions will be asked and on the answers to be given.

Indeed it should be briefly recalled that the employment relationship is characterised by the existence of a subordination link by which the worker is placed under his employer's authority, that is to say his direction and monitoring. Moreover, there is a sharp difference between occupational medicine and medicine as a liberal profession. Occupational medicine is institutionalised, regulated and compulsory. Its aim is mainly preventive and not curative.

On the other hand, this employment relationship lies within an economic and social framework marked by relations of power between the trade unions and the employers, by an economic imbalance between the parties and, more globally, by the competitiveness, flexibility and competition against a background of internationalisation.

The Belgian legislature recently intervened in order to prohibit some types of genetic testing.

## **II - The Law of 28 January 2003 on medical examinations in the framework of employment relationships**

The law of 28 January 2003<sup>3</sup> prohibits the use of genetic testing in these words:

*“In accordance with this principle (current ability), predictive genetic examinations and the screening test of infection by human immunodeficiency virus (HIV test) are prohibited, among others”.*

The notion of “*predictive genetic examination*” gives rise to some questions. Does it apply only to genetic susceptibility tests, or also to genetic monitoring tests<sup>4</sup>. We have seen that, in both cases, the stake can be to prevent some risks from appearing by anticipating a medical future<sup>5</sup>. When reading the report from the Social Affairs Committee of the Senate, it seems that the notion of predictive genetic examination only refers to tests concerning the genetic susceptibility to non-occupational diseases<sup>6</sup>. However, we regret firstly that the text does not specify this more clearly and secondly that, if this definition is correct, the legislation is limited to prohibiting this kind of tests without reaching a decision about the other types.

In the explanatory statement, it is emphasised that “*the aim of this prohibition is to deal with the risk of future and even current use of this type of tests in some cases as the perfect selection criterion to separate those who are “genetically productive” from those who are “genetically unproductive”*”<sup>7</sup>. ... We can be very pleased with the decision of the Belgian legislature, which has clearly included this prohibition in a legal provision.

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<sup>3</sup> *Moniteur belge*, 9 April 2003.

<sup>4</sup> See *supra*.

<sup>5</sup> In the same sense: DOUAY 2003 (1).

<sup>6</sup> Report prepared on behalf of the Social Affairs Committee by Mrs De Roeck and Van Riet, Sénat, *Doc. Parl.*, session 2002-2003, 2-20/4, statement of Dr D. Lison, p. 6-7; precisions of Mr. Mahoux, p. 10.

<sup>7</sup> *Proposition de loi relative aux examens médicaux dans le cadre des relations de travail* (Bill on medical examinations in the framework of employment relationships), Sénat, *Doc. Parl.*, SE, 1999, 2-20/1, p. 2.

However, the law provides for an exception to this prohibition. Indeed, a genetic or HIV screening test could be carried out if a Royal Decree deliberated in the Council of Ministers provides for it. According to the explanatory statement, this exception is provided for in order to “*take account of the evolution of scientific knowledge or the particular needs of some functions, which, for example, entail a risk to the safety of third persons*”<sup>8</sup>. The professions in the framework of passenger transport are quoted (pilot, ...) <sup>9</sup>. It is the question of the exceptions that was most extensively discussed in committee, where one refers to a very strict procedural framework that should limit these exceptions and avoid all risks of abuse<sup>10</sup>.

But it is precisely these hypotheses which are likely to cause discrimination risks and which would merit a debate in Parliament:

a) If the law only applies to the tests concerning the genetic susceptibility to non-occupational diseases, let us examine the various grounds which could be put forward to legitimate the test.

Determination of ability, the so-called ‘current ability’<sup>11</sup>, cannot be invoked, since, at the moment of the test, the person does not present any symptoms of the disease.

The protection of the health of the tested person is not relevant, because the disease has no link with the labour conditions. Preventing this person from acceding to the position will not have any beneficial effect on the evolution of her health status.

The frequently-cited example of the pilot carrier of *Huntington’s* disease shows that the safety of third persons remains the main reason justifying a dispensation from the prohibition of this kind of test. But if these persons – here we mean all workers in high-risk functions and not only some genetically-identified workers – are regularly subjected to health surveillance examinations, they will not be more likely to suffer suddenly from the symptoms of *Huntington’s* disease or another genetic disease

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<sup>8</sup> This leads us to think that the notion of capability set forth in Article 3 also covers concerns related to the safety of third persons. To take another decision would lead to the following paradoxical situation: the aim of protection of third persons is not taken into account in the performance of conventional medical examinations, but rather in the performance of genetic examinations, which is exceptionally provided for.

<sup>9</sup> Opening address of Mrs Laurette Onkelinx, Deputy Prime Minister and Minister for Employment, *Doc. Parl.* 2133/002, Ch. des Repr., ord. session. 2002/2003, p. 3.

<sup>10</sup> Report drawn up on behalf of the Social Affairs Committee by Mrs De Roeck and Van Riet, Sénat, *Doc. Parl.*, session 2002-2003, 2-20/4, p. 11.

<sup>11</sup> Article 3 of the Law of 28 January 2003 and article 3 g) of the Royal Decree of 28 May 2003.

than from any other possible health problem. We think that the early detection of a non-occupational disease risk has to be absolutely prohibited.

b) Regarding the detection of an occupational disease risk<sup>12</sup>, the hypothesis is the following: the test would aim to determine whether an applicant presents a susceptibility to an occupational cancer. The stake would be to know if this person can nevertheless be exposed to a substance that would increase the risk. As Th. MURRAY (2) stresses: “*The danger is that we blame the person and exonerate the environmental or workplace conditions that precipitated the disease. All disease depends on the interaction of organism and environment. Which of the two we focus on is a social and political choice with important ethical consequences*”.

But these are the questions that the law refers back, as technical details, to the adoption of a Royal Decree<sup>13</sup>. On this point, if exceptions prove to be necessary one day, which does not seem to be the case today, we think it is essential that they be ratified by a law, not only because they regard fundamental rights (right to the respect of privacy, of physical integrity), but also because they are likely to reverse the priority order of our prevention principles, that is to say the adaptation of the work to the individual and not vice versa.

While this law has the merit of prohibiting some tests, it nevertheless leaves some problems pending, and in particular the inclusion of these tests in the current framework of the prevention and compensation of occupational diseases.

### **III - Genetic information and occupational health prevention: towards a passive risk individualisation?**

In this part, we will set out a few considerations about the way in which the question of the use of genetic testing fits within the current framework of occupational health prevention and the way it could weigh the respective importance of taking collective and individual risks into account. We will consider the respective roles of the various players in the field of prevention, i.e. the employer, the prevention adviser-occupational physician (called occupational physician) and the workers. Then we will make a few comments on the conception of prevention that emerges from the current legal framework.

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<sup>12</sup> and if the law covers such a test, which is not certain.

<sup>13</sup> Of course, the law provides for the consultation of the *Comité consultatif de Bioéthique*, which nevertheless could not replace democratic debate.

## 1°- Competences of the players in the field of prevention

### A. The employer

The employer has the duty to make sure that work is performed in proper conditions from the point of view of health<sup>14</sup>. In accordance with the Law of 4 August 1996 on the well-being of workers when carrying out their work, the employer is responsible for the implementation of a policy of well-being in the workplace<sup>15</sup> as well as the planned and structured approach to prevention<sup>16</sup>. He has to provide for the services of a prevention adviser–occupational physician<sup>17</sup> who will be responsible for the tasks relating to the surveillance of occupational health<sup>18</sup>.

We should however underline that the employer's responsibility in the event of harm done to his workers' health has been sharply restricted since the adoption of an occupational risk scheme based on occupational diseases<sup>19</sup>.

### B. The occupational physician

We can distinguish, among the assignments of the occupational physician, three interrelated tasks<sup>20</sup>.

The first is to collaborate in research on occupational diseases. The occupational physician takes part in epidemiological studies making it

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<sup>14</sup> Article 20, 2° de la loi du 3 juillet 1978 relative aux contrats de travail (Article 20, 2° of the Law of 3 July on employment contracts).

<sup>15</sup> Loi du 4 août 1996 relative au bien-être des travailleurs lors de l'exécution de leur travail (Law of 4 August 1996 on the well-being of workers when carrying out their work), Council Directive of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work, *Official Journal of the European Communities*, no. L 183 of 29/06/1989 p. 0001 – 0008.

<sup>16</sup> Article 3 de l'Arrêté Royal du 27 mars 1998 relatif à la politique du bien-être des travailleurs lors de l'exécution de leur travail (Article 3 of the Royal Decree of 27 March on the policy of well-being of workers when carrying out their work), *Moniteur belge*, 31 March 1998.

<sup>17</sup> This person can belong to the internal or external department for prevention and protection in the workplace.

<sup>18</sup> Arrêté Royal du 28 mai 2003 relatif à la surveillance de la santé des travailleurs (Royal Decree of 28 May 2003 on the health surveillance of workers), *Moniteur belge*, 16.06.2003, adopted in the framework of the Code on well-being at work (Chapter IV of Title I of the Code on well-being at work).

<sup>19</sup> Loi du 24 juillet 1927 relative à la réparation des dommages causés par les maladies professionnelles (Law of 24 July 1927 on compensation for harm caused by occupational diseases), *Moniteur belge*, 12 August 1927; EWALD F., *L'Etat Providence*, Paris, Grasset, 1986, 608 p.

<sup>20</sup> It is therefore on the basis of the risk analysis that one will decide which colleagues will be subject to health surveillance. This risk analysis is performed by the employer, but the occupational physician collaborates in it. Moreover, the health surveillance results in prevention measures and finds a place in the policy of dynamic risk management.

possible to identify the various causes of occupational diseases and to improve knowledge of the pathological process<sup>21</sup>. Many studies currently aim to identify genetic factors involved in some occupational diseases or to make it possible to improve or clarify the workers' exposure measurements.

The occupational physician is also a player in the field of prevention and risk analysis. In this respect, Article 6 of the Royal Decree of 27 March 1998 on the internal department for prevention and protection in the workplace<sup>22</sup> provides that the occupational physician collaborates in the tasks assigned to the internal department and the analysis of the causes of occupational diseases is listed amongst these.

In the framework of establishing an exposure limit value, it is specified that: "*the risk analysis has to serve as the basis for the measures which will be taken in order to ensure a maximum protection of health, safety and well-being at work*". Indeed, the analysis of individual risks that "takes account of the (genetic, physiological) limitations peculiar to the individual" is added to the analysis of collective risks, carried out in a multidisciplinary way. This analysis of individual risks, subject to medical secrecy, is entrusted to the occupational physician<sup>23</sup>.

Finally, the occupational physician is put in charge of the medical surveillance<sup>24</sup>. Article 3 of the Royal Decree of 28 May 2003 recalls the principles of occupational health surveillance, the aim of which is to promote and maintain the workers' health thanks to risk prevention. It should be noted that the first task assigned to the occupational physician is "*to promote employment opportunities, inter alia by proposing to the employer adapted working methods, the fitting-out of the work station, the search for an adapted work, including for workers whose ability is limited*".

Within the framework of occupational health surveillance, the occupational physician has to carry out an early screening for occupational

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<sup>21</sup> Article 3 d) de l'Arrêté Royal relatif à la surveillance de la santé au travail (Article 3 d) of the Royal Decree on the health surveillance at work), *Moniteur belge*, 16 June 2003.

<sup>22</sup> *Moniteur belge*, 31 March 1998.

<sup>23</sup> *Valeurs limites d'exposition*, Ministère de l'emploi et du travail, Commissariat général à la promotion du travail, 1996, p. 3.

<sup>24</sup> Article 6,2° de l'Arrêté Royal relatif au service interne pour la prévention et la protection au travail (Article 6,2° of the Royal Decree on the internal department for workplace prevention and protection), *Moniteur belge*, 31 March 1998; Arrêté Royal du 28 mai 2003 relatif à la surveillance de la santé des travailleurs (Royal Decree of 28 May 2003 on the health surveillance of workers), *Moniteur belge*, 16 June 2003.

diseases<sup>25</sup>. He also has to look for the contraindications to the position to be held<sup>26</sup>, within the framework of the preliminary assessment as well as the later periodic assessments. The Royal Decree specifies that, in some cases, additional services could bear on “*specific biological monitoring based on valid and reliable indicators, peculiar to the chemical agent and its metabolites or to the biological agent, or a test focused on the early and reversible side effects of the exposure in view of the risk screening*”<sup>27</sup>. Finally, Article 32 provides that “*on the physician’s initiative, the additional services can be replaced by other types of services offering the same validity and reliability guarantees as regards their results. In this case, the prevention adviser–occupational physician chooses the services that respect at best the physical integrity of the worker and guarantee his safety*”<sup>28</sup>. In this case, he will have to inform the *Comité pour la prévention et la protection au travail* (Workplace Prevention and Protection Committee) about it.

Finally, when he detects an ailment of occupational origin whose diagnosis cannot be adequately established, he may carry out the additional examinations that he – or the medical labour inspectorate – deems to be necessary<sup>29</sup>.

We can deduce from these provisions that the occupational physician enjoys some freedom to choose the examinations and tests he considers to be the most appropriate. The use of genetic testing, such as a monitoring test of early mutagenic effects resulting from the exposure to certain substances or ionising radiations, is not formally prohibited. We can imagine that, in the long run, such information might contribute to a better understanding of pathological processes<sup>30</sup>, a better measurement of exposure<sup>31</sup> and, eventually, a better understanding of the risk of occupational disease.

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<sup>25</sup> Article 3 de l’*Arrêté Royal du 28 mai 2003 relatif à la surveillance de la santé des travailleurs* (Article 3 of the Royal Decree of 28 May 2003 on the health surveillance of workers), *Moniteur belge*, 16 June 2003.

<sup>26</sup> Article 28§1, 3° of the Royal Decree of 28 May 2003.

<sup>27</sup> Article 28, §2, 2° and 3° of the Royal Decree of 28 May 2003.

<sup>28</sup> Article 32 of the Royal Decree of 28 May 2003.

<sup>29</sup> Article 33 §6 of the Royal Decree of 28 May 2003.

<sup>30</sup> for example, if damage to the genome can be detected very early and makes it possible to conclude that a process leading to an occupational disease has started.

<sup>31</sup> Which makes it possible, for example, to distinguish amongst the workers who have a high concentration of “metabolites” in their urine, those who have been exposed to high concentrations from those who metabolise substances more or less quickly.

### C. The workers

In accordance with the European Framework Directive and the Law of 4 August 1996, workers take part in the policy of well-being in the workplace<sup>32</sup>. Therefore, each worker – within the scope of his abilities – must look after his health and that of the other persons concerned ... It should however be noted that the criminal liability of workers cannot be invoked, and that the obligations imposed on him do not hinder the employer's liability<sup>33</sup>.

Within the framework of health prevention, workers enjoy some rights, in particular, to information, consultation and recourse under certain conditions. However, our conception of occupational medicine puts a limit on the worker's autonomy insofar as it is a compulsory form of medicine. Indeed, the Royal Decree specifies that it is prohibited to appoint a worker to a post or to keep him at this position if he refuses to undergo the prescribed tests<sup>34</sup>.

## 2°- Conception of occupational health prevention

### A. Transformation of the risk

For several years now<sup>35</sup>, a transformation of the notion of occupational risk has been under way. The risk representation is no longer based on a single-cause technical risk model, but on a set of risk factors that are interdependent and of various kinds (3). Therefore, the prevention of occupational risks necessarily lies within the framework of a systemic, multicausal and multidisciplinary approach, whose centre of concern becomes "the individual in the workplace".

Amongst the various risk factors, we distinguish 'collective risks' from 'individual risks'. Genetic tests are likely to reveal information on this individual risk, that is to say on the set of factors peculiar to the worker and that play a role in determining the probability. The occupational physician is the only person who is competent to carry out the analysis of genetic risks<sup>36</sup>.

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<sup>32</sup> Article 11 and following of the Framework Directive and Article 6 of the Law of 4 August 1996.

<sup>33</sup> Article 15 of the Royal Decree of 28 March 1998, *Moniteur belge*, 31 March 1998.

<sup>34</sup> Article 13 of the Royal Decree of 28 May 2003.

<sup>35</sup> *Loi du 4 août 1996 relative au bien-être dans le cadre de l'exécution du contrat de travail* (Law of 4 August 1996 on the well-being in the framework of the fulfilment of the employment contract), that implements a multidisciplinary approach of the risk.

<sup>36</sup> *Valeurs limites d'exposition*, Ministère de l'emploi et du travail, Commissariat général à la promotion du travail, 1996, p. 3 et 4.

At this stage of our analysis, we will formulate two questions which could serve to stimulate further reflection. Firstly, is the individual risk-collective risk weighting not likely to evolve towards an overvaluation of individual risks compared to collective risks (4, 5)? What role could genetics play in this weighting? And secondly, what are the means at the disposal of the occupational physician to use such information for the purposes of prevention?

*B. "Passive individualisation"*

The European Framework Directive<sup>37</sup> thus provides that particularly sensitive risk groups<sup>38</sup> have to be taken into account in order to protect them against the dangers which specifically affect them. Similarly, the Carcinogens Directive<sup>39</sup> provides that: "employers shall give particular attention to any effects concerning the health or safety of workers at particular risk<sup>40</sup> and shall, inter alia, take account of the desirability of not employing such workers in areas where they may come into contact with carcinogens".

In the same spirit, E. DRAPER (5) cites the example of workers in a Texan petrochemical industry. After discovering 18 cases of brain tumour amongst them, the following question was asked: "why those 18 cases? The group of workers at risk should be identified" and not "why 18 cases of cancers?". Which, according to the author, shows that when the working conditions are "healthy" for "normal" workers, if employees fall ill, the cause has to be found in their life habits or their genes.

We stress, with several authors (4, 5), that this tendency to personalise and individualise risks and to maximally anticipate them legitimates or might legitimate the use of genetic testing with a view to improving prevention. Let us note that the French *Conseil d'Etat*, while rejecting an appeal against the Decree establishing the certificate of capacity for work, recently ratified the use of genetics in order to determine the capacity for work<sup>41</sup>.

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<sup>37</sup> Council Framework Directive 89/391/EEC, of 12 June 1989, on the introduction of measures to encourage improvements in the safety and health of workers at work.

<sup>38</sup> underlined by us.

<sup>39</sup> Council Directive 90/394/EEC, of 28 June 1990, on carcinogens, Article 3.

<sup>40</sup> underlined by us.

<sup>41</sup> French Conseil d'Etat, Judgment of 9 October 2002.

Due to an effect that is a little similar to what ATLAN has called the “street lamp effect”<sup>42</sup>, should we not fear an **overvaluation** of the genetic risk as the ideal element revealing the individual risk?

### C. Usefulness of such information?

However, we wonder about the usefulness of such “individual information” in the current context of prevention that, in accordance with the European Framework Directive<sup>43</sup> and the Law of 4 August 1996 on well-being<sup>44</sup>, has to favour collective protection measures as a matter of priority in comparison with individual protection measures and to adapt the work to the individual.

Moreover, we know that, for some substances like carcinogens, the only efficient prevention is to lower exposure limits (6, 7).

The Royal Decree on health surveillance provides for some individual measures that can be proposed by the occupational physician: he can “intensify” the medical surveillance<sup>45</sup>, he has to propose individual and collective protection and prevention measures (reduction of the exposure, fitting-out of the work station, withdrawal of the worker, ...) <sup>46</sup>, recommend definitive transfers or appointments.

The possibilities of re-assignments or fitting-out of the work station have to be discussed amongst the employer, the prevention adviser—occupational physician and, if the case arises, other prevention advisers, the worker and the personnel delegates in the Committee or, in their absence, the trade union representatives chosen by the worker<sup>47</sup>. In the event of temporary or definitive transfer, the text provides for a procedure for mutual consultation<sup>48</sup> and appeal against the unfitness decision <sup>49</sup>.

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<sup>42</sup> ATLAN explains that in molecular biology, under the influence of the advances of genetics and its massive diffusion, a patent dissymmetry has developed in favour of explanations by genetic factors and at the expense of epigenetic factors. It is what we call the «street lamp effect» in the image of the madman who looks for his keys in the middle of the night under a street lamp, even though he knows that he lost them elsewhere, because the light is better there, ATLAN H., *La fin du “tout” génétique. Vers de nouveaux paradigmes en biologie*, Paris, INRA, 1998, p. 59.

<sup>43</sup> Council Directive 89/391 of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work, *Official Journal of the European Communities*, L No. 183, of 29 June 1989, p. 1-8, article 6 2. D) and h).

<sup>44</sup> Law of 4 August 1996 on the well-being of workers when carrying out their work, *Moniteur belge*, 18 September 1996.

<sup>45</sup> Article 33.

<sup>46</sup> Article 34.

<sup>47</sup> Article 57.

<sup>48</sup> Articles 59 to 63.

<sup>49</sup> Articles 64 to 69.

We should however note that these measures seem to have to be taken with regard to the current health status of the worker, and not possible future susceptibilities<sup>50</sup>.

#### *D. Economic stakes of prevention*

Are these mechanisms sufficient to make the worker certain that his individual risk – including his genetic risk– is taken into account exclusively for a purpose of prevention?

Occupational health prevention comes at a price. E. DRAPER shows that one of the reasons why American employers favour using susceptibility tests is to reduce the cost of occupational health prevention (5). The economic analysis of R.A. EPSTEIN shows that: “Improving the working conditions is expensive, but ultimately it is only beneficial to a limited group of persons. If only the hyper-sensitive workers are excluded, the damage done to other workers would be quite low, without any additional expenses. In terms of costs/benefits, it would be clearly better to exclude the predisposed persons without adapting the working environment (8)”.

T. COUTROT explains how the neo-liberal management of employment triggers a merciless selective mechanism: “*Nowadays, the requirement of transparency and individualisation of human resources management seeks to encourage the development of strong potentials, to ensure the adaptation of employees to working conditions and to push out individuals deemed to be irretrievable (9)*”.

We can perceive the economic stakes that underlie the choice of a policy of occupational health prevention and the implementation of binding mechanisms intended to avoid any unjustified selection (8). Is an overvaluation of the individual risks in the current economic and social context not likely to weaken a genuine occupational health prevention to the benefit of a greater selection of workers? Are the above-described mechanisms sufficient to enable the occupational physician to resist this danger?

## **IV – Genetic information and occupational disease**

The current Belgian system of occupational disease compensation<sup>51</sup> is blind to risks: it employs the veil of ignorance (10), a condition

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<sup>50</sup> Article 17 of the Royal Decree of 28 May 2003.

<sup>51</sup> *Lois coordonnées du 3 juin 1970 relatives à la réparation des dommages résultant des maladies professionnelles* (Coordinated Laws of 3<sup>rd</sup> June 1970 on the compensation of damage resulting from occupational diseases), *Moniteur belge*, 27 August 1970.

necessary to the equality principle and the fairness of the compensation system.

In the framework of the list system, it is indeed sufficient that the victim has been exposed to the risk of occupational disease – insofar as this exposure is, according to generally admitted medical conditions, likely to cause the disease – in order to be entitled to the compensation<sup>52</sup>. Moreover, as soon as the occupational disease is the (at least partial) cause of the work incapacity, the latter is assessed as a whole and not only for the occupational part. This principle, called the ‘principle of indifference to the previous state’, further strengthens the veil of ignorance vis-à-vis possible genetic predispositions (11).

In 1994, the legislature added one condition to the occupational risk by deciding that there is an occupational risk when the exposure to the harmful influence is inherent to the practice of the occupation and is substantially greater than that incurred by the general population and insofar as this exposure is likely to cause the disease, according to generally accepted medical knowledge<sup>53</sup>.

However, the question of the limit of this ignorance vis-à-vis genetic data is worth being asked. Thus, upstream, when determining the occupational nature of a disease in view of its inclusion on the list, a causality factor between the occupational exposure and the disease is analysed. Are the genetic factors not likely to “muddle” this link and to prevent some diseases from being placed on the list of occupational diseases?

As A. THÉBAUD-MONY emphasises, there is an irreducible contradiction within the occupational disease scheme: “the law exempts the victim from the burden of proof by applying the origin presumption, but the expert responsible for applying it is constantly seeking “objective”, technical or medical criteria which prove the causality between occupation and disease” (12)

On the other hand, the problem of causality emerges again in the open system that, in Belgium, coexists with the list system. In the framework of the open system, the victim has to prove that the ailment from

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<sup>52</sup> The presumption of causality between exposure and disease is not susceptible to proof to the contrary.

<sup>53</sup> *Article 32 al. 2 des lois coordonnées relatives à la réparation des dommages résultant des maladies professionnelles*, (Article 32, Indent 2, of the Coordinated Laws of 3 June 1970 on the compensation of damage resulting from occupational diseases), *Moniteur belge*, 27 August 1970.

which she suffers finds its direct and determining cause in her occupational activity. The practice of the profession has to have been the real, predominant and decisive cause of the disease (13). Is this always the case when an individual predisposition factor is interposed between the disease and the exposure?

Moreover, it is a political and social choice that governs the adoption of this system. Nevertheless we know that the functioning of the occupational disease scheme could be improved in particular by reducing the phenomenon of under-declaration and by greater visibility. These transformations should entail a substantial increase of the costs. Given the prospects of privatisation of some risks and the contamination of the solidarity scheme by logics peculiar to private insurances, the principle of the veil of ignorance could be abandoned if we do not watch out ...

We cannot, within the framework of this article, review the various modalities of the systems for managing this type of risk. However, we should emphasise that in comparison with others<sup>54</sup>, the current Belgian system makes it possible to guarantee against a discrimination after the realisation of the risk.

## Conclusion

The law recently adopted in Belgium does not solve all problems relating to the use of genetic testing (susceptibility tests and monitoring tests) in the workplace. These have to be analysed in the light of the legal framework of the prevention and compensation of occupational diseases.

The point will be to understand not only to what extent the use of these tests meets the requirements of usefulness, necessity and proportionality within the framework of the three tasks assigned to occupational physicians, but also to resolve the conflicts which might arise between these three tasks. In view of an overvaluation of the individual risks compared to collective risks, we wonder about the point of knowing whether the occupational physician has sufficient means and autonomy to prevent an instrumentalisation of these tests for a selective purpose (14)? A more global study of the evolution of human resources management (15) has to be undertaken in this respect.

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<sup>54</sup> In this way, the American system that organises the risk coverage through insurance contracts purchased directly by the employer, ROTHSEIN M. A., *The Law of Medical and Genetic Information in The Workplace, Genetic Secrets: Protecting Privacy and Confidentiality in the Genetic Era*, Yale University Press, 1997, p. 293 and following.

Finally, let us emphasise that the current occupational disease scheme, even if its improvement is desirable, does offer certain guarantees against the risk of exclusion of some multifactorial diseases.

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